

American Aviation

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OPERATIONS
MAINTENANCE
EQUIPMENT



**'Long-Range Bombers
Will Prevent Total War'**

**Sir John Slessor
Marshal of the RAF . . 24**

JUNE 21



**Convair, Lockheed
Rush VTO Tests 20**



**Navy Gets A4D's
"Smallest"
Combat Jet 22**



**CAB Rules Out Airline
Rate Change 28**



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Next six months may decide direction of guided missile programs.

Sharp criticism of Air Force, Army, and Navy programs has come from Senate Appropriations Committee which demands Pentagon "coordination" on missiles. Defense Secretary Wilson has been directed to investigate and report findings by Jan. 15, 1955.

Senate group has impression that services are trying to outdo each other on missiles, that programs are "disorganized," and that there should be attempts at standardization—at least on missiles being produced for approximately the same missions.

Result may be realignment of research and procurement on which AF is spending \$678 million this year and plans to spend \$46 million in fiscal 1955. Navy's 55 program is budgeted at \$55.5 million.

•
Curtis-Wrights J65 Sapphire engine, after experiencing considerable difficulty in its initial flight tests, is now getting enthusiastic support. Douglas claims to have had less trouble with J65 in the A4D on first run-ups than with any jet engine yet.

Now operating in over 200 planes, J65 is producing 200 pounds more thrust than official rating (7220 pounds), has specific fuel consumption 6% below guarantee, and is getting about 200 hours between overhauls.

Sapphire is officially in Douglas A4D, North American FJ3, Republic F84F and RF-84F, Martin B-57, and, unofficially, in Lockheed F-104.

•
Vickers-Armstrongs has now tapped both the North American (TCA and Capital) and South American (Venezuela's LAV) markets with its Viscount transport.

Firm orders for the four-engined turboprop now total 99, will go over the 100 mark shortly when Central African Airways' commitment for five is signed. Twelve orders (non-British) are from overseas.

Other airlines considering Viscounts are concerned about Capitals option for 37. If option is exercised, new customers face the possibility of not getting deliveries until about 1957.

•
Interest in rotary-wing development continues to increase.

British aircraft industry will go into volume helicopter production for the first time, with new RAF and Navy orders for over 200 craft.

International Air Transport Association formed a new helicopter committee to deal with problems of legislation and international regulation. ATA-AIA group is developing preliminary proposal for revision of Civil Air Regulations to cover transport helicopter airworthiness.

Air Coordinating Committee will release a study report next month of nine convertiplane designs felt to be reasonably feasible in the near future.

On economic side, Mohawk Airlines has started first local service passenger helicopter operation without mail pay or subsidy. Further Government aid for helicopter service (beyond that now received by three certificated operators) isn't likely in near future.



The Washington View

Best Bet-Colorado Springs

Best bet for location of the \$126 million Air Force Academy, from this corner, is Colorado Springs, Colo. Inasmuch as the Academy Site Selection Committee didn't fix on a unanimous choice, Air Secretary Harold Talbott has final say on one of three sites recommended—Colorado Springs, Colo.; Alton, Ill.; or Lake Geneva, Wis. There had never been any real question that Colorado would get the nod but the formalities had to be observed.

Colorado Springs is in the interior, has a wonderful climate, and a suitable site is available there. More important, however, Colorado Springs is where every one knows President Eisenhower wants the service school to be located. The President has said he knows where the AF school should go but has never divulged his choice publicly.

Low Spending Worries AF

A belated Air Force effort to step up the present low rate of obligation of funds for aircraft, missiles, and related equipment is seen in the current tour of aircraft and engine manufacturing plants by top USAF officials.

There has been no mistaking the Air Force's concern with over \$4 billion in unobligated funds for aircraft alone. This extensive touring of plants by the leading AF development and production experts can only be construed as confirming the anxiety felt in the Air Force and throughout the Pentagon.

The low Air Force rate of spending is spelled out monthly in Defense Department reports on the status of funds by budget category. For example, as of March 31, Air Force obligations for aircraft in the current fiscal year stood at only \$284,793,000 out of an unobligated balance of \$4,694,521,000 at the beginning of fiscal 1954.

Why Skip the Comet III?

In sharp contrast to the political hassle over CAA certification of the Comet III, all signs point to fast action in CAA's approving the Vickers Viscount. And the comparison, oddly enough, raises some interesting aspects particularly as to the current handling of certification for the Viscount.

When CAA picked its team to study the British-built turboprop, members of earlier

prototype survey groups were ignored and an entirely new team was named. This group found time to examine such timely aircraft as Italy's Nardi FN 333 and France's SNCASO Djinn helicopter in a month's tour of London and Europe. Yet, they did not get around to the de Havilland Comet III, although Pan American's contract for three Comet III's has a clause requiring CAA certification.

Previously CAA has been reluctant to discuss Comet III certification because the aircraft was a "paper airplane."

However, the Comet III had just rolled out of the de Havilland hangar for the first time when the CAA team arrived in Europe.

Fifth Amendment Pilots

CAB today is faced with a decision that can seriously alter the future course of the Board's accident investigations. The question of whether or not immunity granted at CAB accident hearings relieves witnesses from subsequent enforcement action is at issue.

The stage was set when CAA instituted a proceeding against two United Air Lines pilots to suspend their licenses on the basis of testimony they gave in a CAB hearing. The pilots had told their story only after being granted immunity when they first invoked the Fifth Amendment.

Facing CAB is a two-fold problem: (1) A favorable decision for CAA, which argues that immunity prevents only criminal prosecution and not punitive actions, would "dry up" an important source of determining the probable cause of aircraft accidents; whereas (2) a decision for the pilots could lead to every pilot in such a case escaping enforcement action by invoking the Fifth Amendment and then gaining immunity.

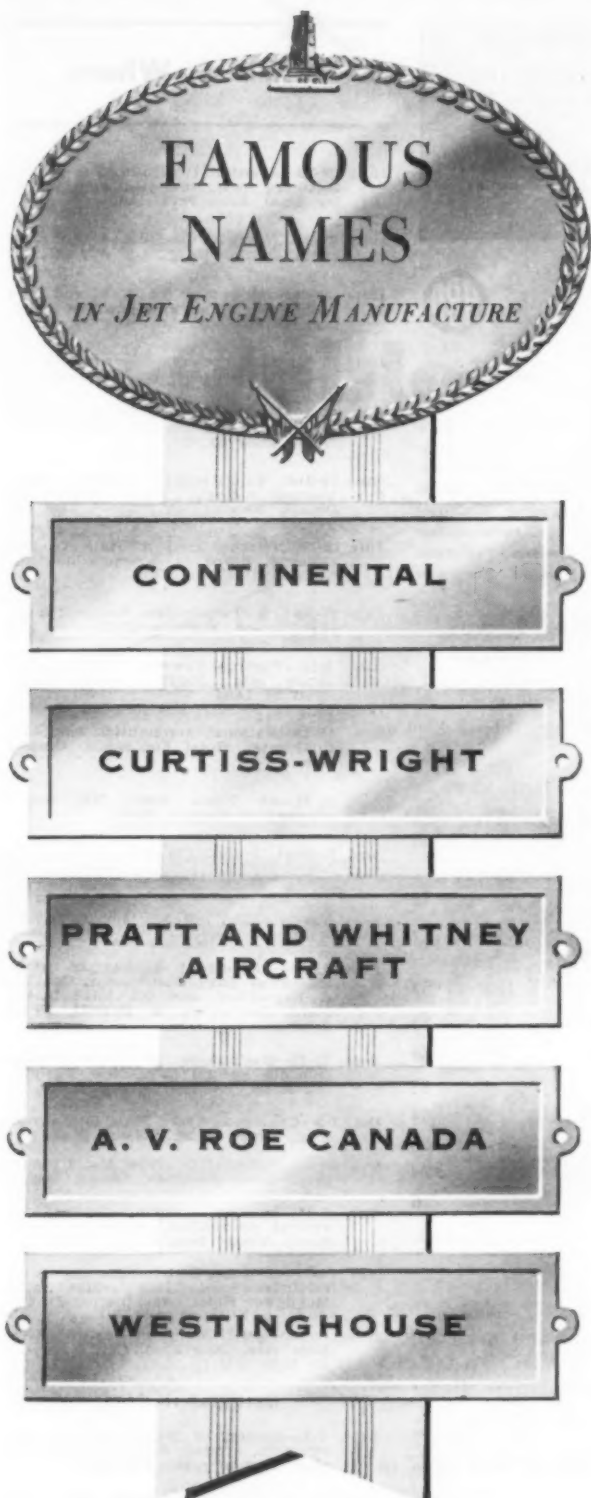
Stand On Own Feet

The issue of outright elimination of local service lines is now before CAB in a formal proceeding—and can be expected to come up in each local certificate renewal case from now on.

The Board's Republican majority, implementing the president's civil air policy report which said consideration should be given to transfer of uneconomic local service points to trunkline as a means of reducing subsidies, threw open the Southwest Airway's renewal case to all trunklines desiring to apply for FWA's route. The two Democratic members, Josh Lee and Joseph P. Adams, voted against it "they also filed a vigorous dissent to the local service section of the air policy report."

CAB's Chairman Chan Gurney, asked whether each renewal case would be expanded to include the trunkline absorption issue, said: "I suppose it will, by the same '3-2' vote." Regarding charges by Lee and Adams that the "battle for elimination of the local service industry has begun," Gurney said each case will have to "stand on its own feet."

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1025 Vermont Ave. N.W., Washington, D. C.

Editor and Publisher
Wayne W. Parrish

Executive Editor
Eric Bramley



Phone: Sterling 3-3400

Managing Editor
William D. Perreault

Cable: AMERAV

JOSEPH S. MURPHY Technical Editor
WILLIAM V. HENZLEY Transport Editor
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June 21, 1954

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General Manager: Leonard Eiserer
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Circulation Promotion Mgr.: Larry Brettnner
Circulation Service Mgr.: Geneva C. Kinnaird
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American Aviation is published every other Monday by American Aviation Publications, Inc., Washington, D. C. Printed at The Telegraph Press, Harrisburg, Pa. Subscription rates for United States and Canada—\$5.00 for 1 year; \$8.00 for 2 years. All other countries—\$7.00 for 1 year; \$12.00 for 2 years. Entered as Second Class matter in Washington, D. C., and Harrisburg, Pa.

Change of Address: Send old address (exactly as it appears on mailing label for your copy of magazine) and new address, including zone number, if any, to 1025 Vermont, N. W., Washington, D. C. Allow two weeks for change-over.

Publishing Corporation: American Aviation Publications, Inc., Wayne W. Parrish, president; Leonard Eiserer, vice-president and general manager; Albert H. Stackpole, Eric Bramley, vice presidents; E. J. Stackpole, secretary-treasurer.

American Aviation incorporates Airports and Air Carriers, Airports, Aviation Equipment, The American Pilot, Aviation Sales and Service, U. S. Aviation and American Airports. All rights to these names are reserved.

ADVERTISING OFFICES . . .

New York Office: Administration Building, LaGuardia Airport, New York, N. Y. Illinois 7-4100, Stephen R. Kent, director of advertising; Menard Dowsett III, regional advertising manager.

West Coast Office: Park Central Building, 412 West Sixth St., Los Angeles 14, Calif. Trinity 7997, Raymond M. Schuster.

Chicago Office: 139 North Clark St., Chicago 2, Ill. Central 6-5804, A. B. Copeland, regional advertising manager.

Foreign Advertising Representative: United Kingdom—Pearl Cooper, Ltd., 213 Norfolk St., Strand, London, W. C. 2. Tel. Temple Bar 8111/2.

OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. \$200 per year. Managing Editor: Keith Saunders.

American Aviation Directory: twice yearly listing of products, people and organizations. \$7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. \$13.50 per year in USA; \$14.00 in Canada; \$15 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

Air Traffic News (Incorporating Air Tariff Reports): Daily rates and tariff news. \$175 per year. Managing Editor: Wallace I. Longstreth.

Air Information Division: 595 Broad Avenue, Ridgefield, N. J. Phone: Morsemore 8-8850. Edward H. Henkler, director.

When & Where

June 20-23—Aviation Distributors & Manufacturers Assn., mid-year mtg., Stau-
ley Hotel, Estes Park, Colo.

June 21-24—Inst. of the Aeronautical Sci-
ences, summer mtg., Los Angeles

June 22-24—Joint mtg. of ATA and AIA
committees on turbine-powered trans-
port regulations, Los Angeles.

June 22-23—ATA reservations committee
mtg., Park Plaza Hotel, St. Louis.

June 24-26—American Helicopter Society
10th annual forum, Mayflower Hotel,
Washington, D. C.

June 29-July 2—University Aviation Assn.,
summer mtg., Hotel Fontenelle,
Omaha, Neb.

July 13-15—National Assn. of State Aviation
Officials, board of directors meeting,
Nantucket Island, Mass.

July 27-Aug. 5—Twenty-first National Soar-
ing Contest, Elsinore, Calif.

Aug. 9-11—Turbine Powered Air Transpor-
tation mtg., Seattle, Wash. (spon-
sored by IAS).

Aug. 18-19—National Aeronautics Assn. an-
nual mtg., Hotel Fontenelle, Omaha,
Neb.

Aug. 19-22—Air Force Assn., 8th annual
convention, Omaha, Neb.

Aug. 31-Sept. 2—Scintilla Div., Bendix Avia-
tion Corp. ignition conference at
Sidney, N. Y. plant.

Sept. 4-6—National Aircraft Show, Dayton,
Ohio.

Sept. 13-24—Instrument Society of Amer-
ica, First Int'l Instrument Congress
& Exposition, and 9th Nat'l Instru-
ment Conference & Exhibit, Phila-
delphia.

Sept. 22-25—Nat'l Assn. of State Aviation
Officials, annual mtg., New Washing-
ton Hotel, Seattle.

Oct. 3-5—Champion Spark Plug, 10th annual
mtg., Hotel Secor, Toledo, Ohio.

Oct. 27-29—National Business Aircraft Assn.
mtg., Hotel Adolphus, Dallas, Tex.

Nov. 8-10—National Aviation Trades Assn.
annual convention, Biltmore Terrace
Hotel, Miami Beach, Fla.

Nov. 14-17—Aviation Distributors and Manu-
facturers Assn., 12th annual mtg.,
Mayflower Hotel, Washington, D. C.

Nov. 17-19—Calif. Assn. of Airport Execu-
tives mtg., San Jose, Calif.

INTERNATIONAL

Sept. 7-12—Society of British Aircraft Con-
structors, Aircraft Show & Flying Dis-
play, Farnborough, England.

Sept. 13-17—IATA, 10th annual mtg., Paris.

Sept. 19-21—Int'l Northwest Aviation Coun-
cil 18th annual convention, Hotel
Vancouver, Vancouver, British Colum-
bia.

Sept. 20-23—Federation Aeronautique Inter-
nationale general meeting, Istanbul,
Turkey.

Sept. 21—IATA, Traffic Conferences, Italy.

Oct. 5—ICAO, air navigation mtg. for the
North Atlantic region, Montreal.

AMERICAN AVIATION

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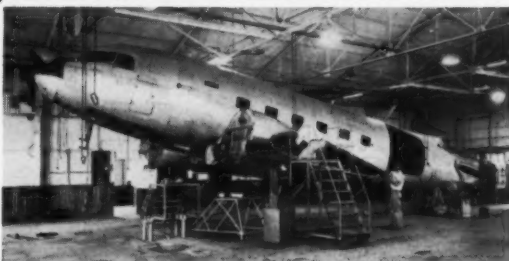


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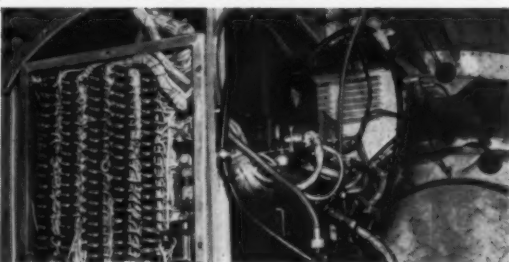
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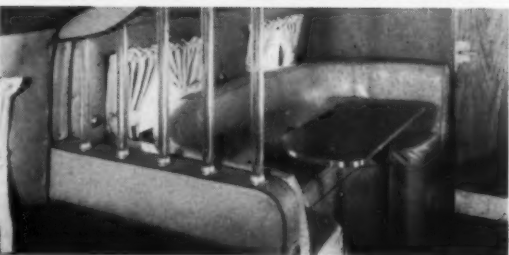
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Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N. W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

ALL SIDES GIVEN

To the Editor:

Have just been reading with interest the article on Progress Payments on page 38, of the May 24 issue of AMERICAN AVIATION Magazine.

I am glad to read this story, that gives all sides of this controversial problem, and especially because it gives Mr. Wilson credit for his honest effort in attempting to straighten out some of the abuses in a business-like manner. I expect to call Mr. Wilson's attention to this article on his return from the Far East.

C. HERSCHEL SCHOOLEY

Director
Office of Public Information
Department of Defense

REVERSE THRUST BIDS

To the Editor:

Please permit me to invite your attention to an article entitled "Four Firms in USAF Reverse Thrust Race," on page 13 of the April 12, 1954, issue of AMERICAN AVIATION.

This article contains the following sentence: "High Air Force officials acknowledge that they are about to contract with Aerojet for further development and flight test of the SNECMA thrust reverser." Officials at this headquarters take issue with this statement and contend that it is in error because no decision has yet been made to award a thrust reverser contract.

Actually, five companies, including the Aerojet-General Corporation, have submitted bids on the development of a thrust reverse device of the aerodynamic type. All of the technical proposals offered by these five manufacturers are now being evaluated by the Wright Air Development Center at Wright-Patterson Air Force Base, Ohio. Until the evaluations of the proposals can be completed, no decisions can be made on the awarding of a contract. At this time no such decision has been made.

It was my thought that you would like to have this information.

JULIAN B. CROSS
Lt. Col., USAF

Headquarters, Air Materiel Command
Wright-Patterson Air Force Base
Ohio

(Information on the Air Force's activities with thrust reversers contained in this article was obtained from the Pentagon through official channels.—Ed.)

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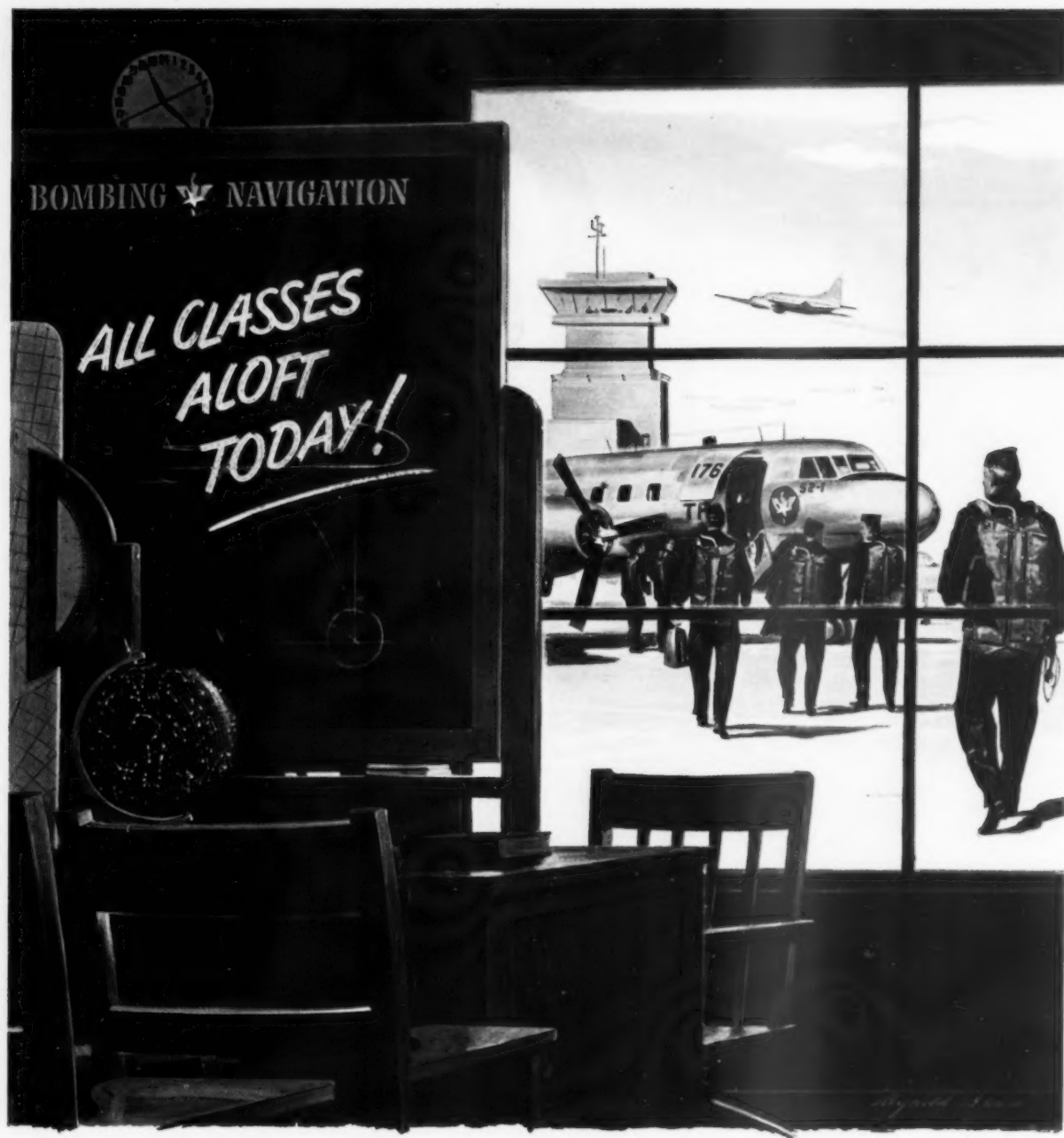
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Editorial

Too Slow and Too Late?

CHARLES J. V. MURPHY is probably the best-informed writer on military matters in the United States. He is especially knowledgeable about air power. A member of the board of editors of *Fortune* magazine, he has played a greater role than generally recognized in influencing public opinion through not only his own writings but in aiding in the writing and speechmaking of air power spokesmen.

by
W. W. P.

Thus his article "Is the H-Bomb Enough?" in the June issue of *Fortune* merits more than passing attention, for from his unique vantage point he has come up with a critical appraisal of U. S. air

power which can't be sloughed off easily.

Boiled down, Mr. Murphy's conclusions are that (1) the Air Force buildup is proceeding a good deal slower than the Pentagon has intimated and (2) the Air Force's front-line strength, in 1956-57, will by technical standards be considerably less than was first planned.

It is obvious that Mr. Murphy thinks rather highly of that trio of air power advocates which has been critical of current Air Force planning, namely Senator (and former Air Force Secretary) Stuart Symington, former Air Force Secretary Thomas K. Finletter, and former Under Secretary of the Air Force Roswell L. Gilpatric. He joins them in saying that the Pentagon management "has been less than candid" about its handling of the Air Force budget and he is inclined to believe them when they say that last year's controversial budget cut hurt the long-range Air Force program.

It is Mr. Murphy's belief that the Eisenhower Administration understands much more clearly than the Truman Administration the meaning of the "massive retaliation" policy built out of the A-bomb and the H-bomb era. The real new meaning of "massive retaliation," he points out, is that it can be dealt out in varying degrees, in a wide variety of military situations, and that it does not mean unconditional war upon cities alone. But he contends that if the Administration really intends to implement this policy it must provide the Air Force with a great deal more than is now on the planning books.

Stated another way, our "massive retaliation" potential need not be reserved solely for an all-out bars-down war, as some leading politicians such as Adlai Stevenson have wrongly assumed. Thermonuclear energy can be applied through various weapons in various ways, small and large, and applied to the fringe-area types of war for which this country is not even today prepared. And it is preparation for this type of war—the Koreas and the Indo-Chinas—which Mr. Murphy believes has received less than enough attention and action.

Without going into the involved details of budgets and procurement, suffice it to say that Mr. Murphy provides facts and figures to bolster his viewpoint that the Air Force simply doesn't have enough airplanes on order to overcome the two key factors of obsolescence and attrition. He thinks the new Pentagon management will have no better Air Force than the Truman Administration planned—and will have it several years later.

It is time the Senate Armed Services Committee got busy to dig deeply into Mr. Murphy's challenge to find out just how right or wrong he is. As it stands now, his thought-provoking article leaves little for comfort.

2 MPH in 175 Years

ADMIRAL CHARLES F. HORNE (USN, Ret.), manager of Convair's guided missile plant at Pomona, Calif., delivered a bang-up speech recently on logistics. Here are some of his telling points:

In the Revolutionary War the logistical task of getting gunpowder on its way by horse-drawn transportation after being requisitioned by horseback averaged the phenomenal speed of one and one-third miles per hour.

In World War II, based on official records, the average speed from time of requisition to delivery of the needed item was about three and one-half miles per hour.

"So—in the past 175 years—with all the advantages of modern communication and transportation, with radio that circles the globe in the jerk of a saddle cinch and planes that fly 100 miles in the time required to hitch a team, with all this, we have increased the speed of getting supplies to the front by only two miles per hour.

"Plainly, in the field of logistics, we have failed miserably to keep pace with our technological progress."

In World War II, he points out, we depended upon a vast stockpiling system, something that future wars will not permit. The problems are known, but so little is being done. Logistics is probably the greatest single blind spot in Pentagon thinking and planning today, yet it is one of the most crucial of all items. Thanks to Admiral Horne (a former administrator of CAA, incidentally), for pointing up the issues again.

Proud to Present . . .

We are very proud to present elsewhere in this issue an interview with Marshal of the Royal Air Force, Sir John Slessor. We urge you to read the bold and dynamic comments on air power by this brilliant analyst.

. . . WAYNE W. PARRISH

CREATIVE ENGINEERING BY FAIRCHILD'S ENGINE

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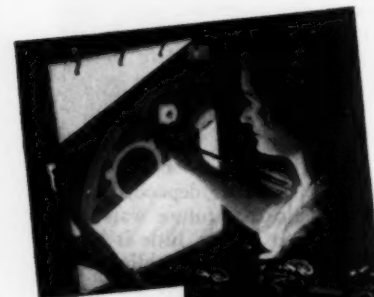
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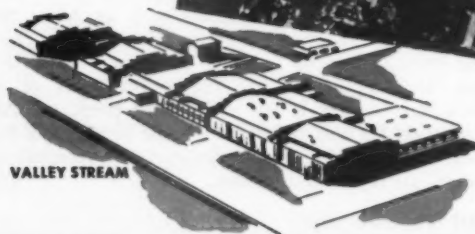
Experimental and production test cells to accommodate quantity output of auxiliary power generators—Fairchild turbojet engines.



1925: Open-air engine test stand. At right: Mass production of in-line inverted air-cooled engines during World War II.



Proficiency in fabrication of sheet metal for Fairchild's J44 turbojet cowlings, combustion chambers and nozzles.



Over a quarter century has passed since a single engine test stand served Fairchild Engine Division as it ventured into aviation engine and auxiliary powerplant design. Today, three up-to-the-minute facilities provide nearly a million square feet of floor space. This is progress in production! But, even more important, is the Fairchild creative engineering that has resulted in this logical expansion.

**SOME OF THE
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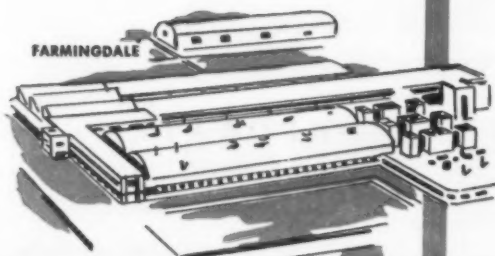
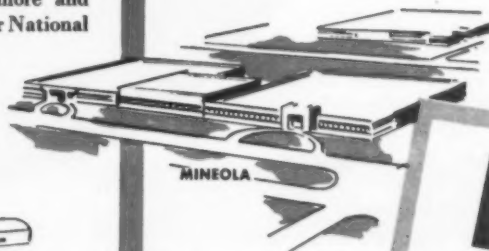
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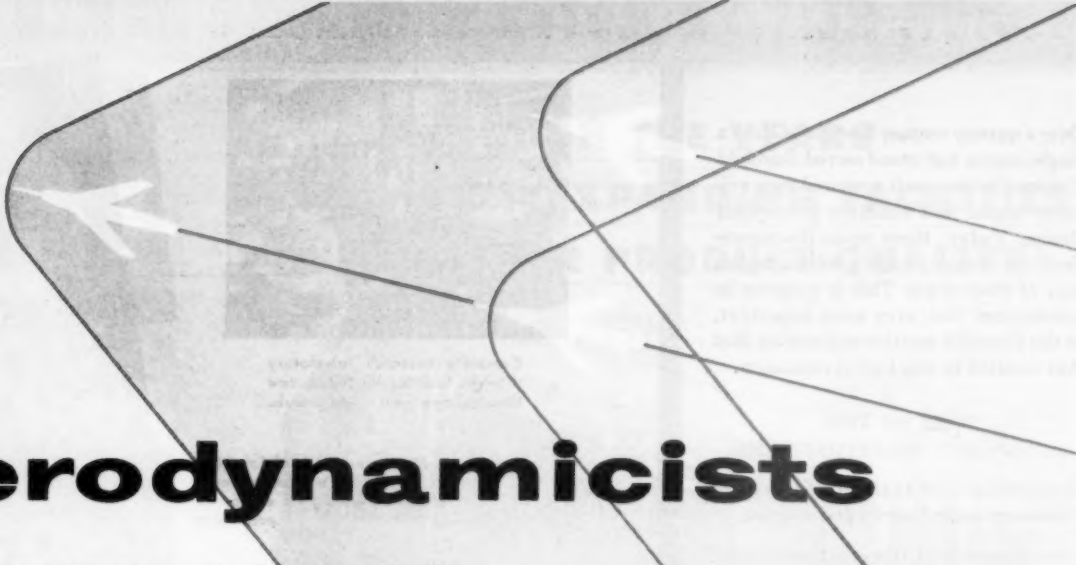


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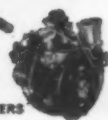
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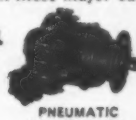
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Industry Spotlight

• Hamilton Standard Div. of United Aircraft, which has a license agreement with de Havilland's Propellers Ltd., submitted proposal to Capital Airlines that it switch from Rotol propellers on the Viscount to de Havilland props. This might later make it possible for Hamilton to be the source of supply for Viscount props.

• Latest company to become active in helicopter industry's efforts to isolate rotor vibration and improve 'copter stability is Lord Manufacturing Co., Erie, Pa. Lord's new self-tuning dampener is scheduled for tests on a Piasecki helicopter very soon.

• Use of the sonic boom, or more specifically the destructive force of shock waves which generate the sonic boom, as an offensive weapon is being studied by the U. S. Air Force which is conducting experiments to determine effect of these waves on other aircraft. Normal flight experience with supersonic aircraft passing slower flying planes has been inconclusive. Current experiments involve effects on other aircraft at varying angles.

• Contrary to earlier reports, total order for Lockheed C-130 turboprop cargo planes is 29. Most recent order covered 20 new aircraft which was in addition to the two prototypes and initial production order for seven planes. Two prototype planes are being completed at Burbank.

• The 3,000/4,000 horsepower turboprop under development by Rolls-Royce, reportedly for a four-engine transport of Vickers being designed to a specification of British European Airways, is an axial flow engine of twin-spool compressor design designated the RB109.

• Strategic Air Command's Second Air Force will soon become USAF's first modern all-jet bomber force. During ceremonies at Barksdale AFB, La., on July 31, SAC will "retire" Boeing B-29 and B-50 piston-powered bombers. Command will be completely equipped with Boeing B-47's, Republic F-84's, and Convair B-36's with jet pods.

• Lycoming Div., AVCO Manufacturing Corp., has a new USAF contract for a major gas turbine program which will be in addition to its earlier T53 small turboprop project for the Navy. Latter contract is said to be "substantially advanced." No comment on the power range of the new turbine engine is available.

• Recent report in another aviation publication that the Piasecki H-21 test model at Edwards AFB, Calif., "lost a blade during flight tests" was exaggerated in the sense that the H-21 actually lost only part of a top cover of one rear rotor blade.

• A great deal of industry interest was shown at the Air Force's recent all-jet gunnery meet at Las Vegas with more than 20 official manufacturing representatives observing the contests. A number of NATO observers were also present.

• New development in the controversial Navy trainer competition, Beech Aircraft Corp. vs. Temco Aircraft Corp., is about to break. At magazine deadline, Raymond H. Fogler, Assistant Navy Secretary (Materiel), was involved with a forthcoming decision. The new bids from the two companies, asked for earlier by the Navy, have been held up by the Navy. It is indicated that the new-bid idea has been discarded and that a winner may be named soon.

• Although the new Defense Department Directive No. 5200.6, setting up a new "classification" known as "For Official Use Only," meets a need of the military services, it leaves the door open for certain abuses in withholding unclassified material. Industry's "right to know" information falling into this category is an important factor.

Correction: In the May 24th issue this column carried an item regarding 45 Boeing B-47's based at Pinecastle AFB, Fla., setting a record monthly utilization. The actual utilization was 52.16 hours per plane, not minutes as reported.

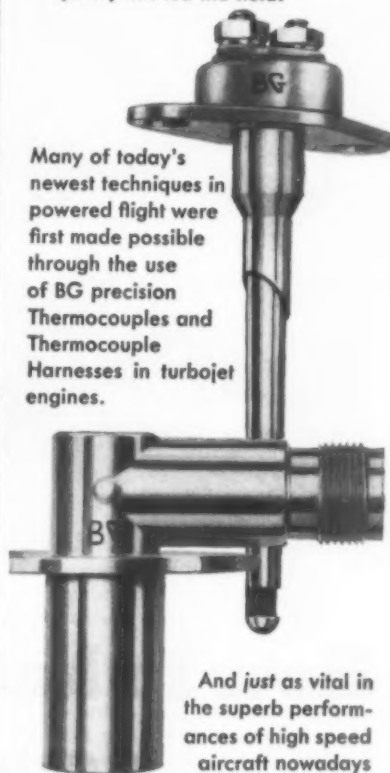
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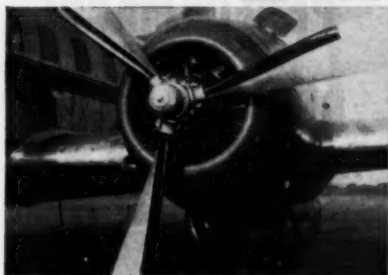
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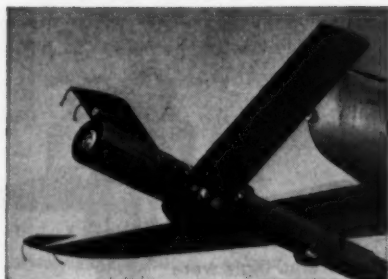
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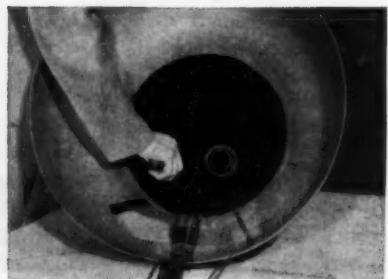
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AMERICAN AVIATION



VICKERS' concept of its 48-passenger Viscount bearing the markings of Capital Airlines.

British Invade U.S. Market With Viscount

Capital hopes new turboprops will lead schedule race with Big Four; confident of CAA certification.

By WILLIAM D. PERREAULT

CAPITAL AIRLINES' order for three British-built Vickers Viscounts for delivery during the first quarter of 1955 is of major significance to both the manufacturing and airline industries:

- Contract for three of the turboprop-powered Viscounts (rhymes with My Counts) carries an option for 37 more planes for delivery between March of '55 and February '57. Option would raise present \$3 million contract to approximately \$45 million including aircraft, spares, and import taxes of 15%.

- U. S. transport market, effectively cornered by domestic manufacturers since its inception, has been crashed by Britain's Vickers-Armstrong Limited, a goal of the British industry throughout the postwar years. If Capital exercises the option the order will represent about 20% of the British industry's total postwar transport sales in dollar volume.

- Capital Airlines will be inaugurating the first turboprop-powered

transport service by a U. S. operator, approximately two years after Europe got its first Viscount service by British European Airways in April 1953.

Basic information on financing, spare parts programming, engine overhaul, and similar data is not being discussed by Capital officials. Reflecting his attitude on this general type information, Capital president J. H. Carmichael commented: "There is no real point in disclosing details of financial deals between two independent companies."

Carmichael admitted, however, that commitments for the entire \$45 million financing had been arranged by the two companies, Capital and Vickers. He declined to discuss unit price of aircraft. Earlier this year Vickers offered Viscounts to Trans Caribbean Airways at \$750,000 each. This unit price, representing a basic aircraft without much of the specialized communications and instrumentation used by U. S. carriers, would account for \$30 million. Another \$3 million in spare Rolls-Royce turboprop Dart engines is involved. Import taxes would

add \$4.9 million to this total bringing the figure to \$37,950,000, without the "extras."

Capital now operates 12 Lockheed Constellations, 25 Douglas DC-4's, and 25 Douglas DC-3's. The Viscounts will initially be used to replace Constellations, later to replace DC-4's and finally DC-3's. One of the principal advantages of the Viscount to Capital, Carmichael states, is the potential it offers to standardize on a single type aircraft. There are only three airports on Capital's routes on which Viscount operations would be limited so as to reduce payload, he says.

Information from London is that Vickers will establish a company-owned warehouse in Virginia, near Capital's Washington, D. C. base, providing over-the-counter spares on demand. This is equivalent to the \$100,000 warehouse maintained by Vickers in Montreal for Trans Canada Airlines.

Rolls-Royce will overhaul Capital's Dart engines, at least during the early period of Viscount operation. Present engine overhaul time on the Dart is 750 hours but TCA fully expects authorization for a 900-hour overhaul and BEA will soon test a group of engines at 1000 hours. Rolls-Royce's most recent quotation on Dart overhaul

was about \$7000 per engine.

The engine will be shipped by surface transportation, a method with which the Canadians have had considerable success. This may require 100% spare engines initially but later Capital hopes to establish its own overhaul facility at which time spares will be kept at about 50%.

Capital is confident Viscount certification by CAA presents no problems. A CAA team has been in Europe since mid-May discussing certification with the Air Registration Board. CAA is acting on a request by Trans Caribbean to certificate the Viscount. There is no further word on the status of this proposed order but Capital expects to be the first U. S. operator of the four-engine Viscount.

CAA certification will be simplified by a series of modifications incorporated in these ships at the request of TCA, including reinforced skin sections, improved fuel system arrangement providing more selectivity, Maxaret anti-skid brakes, etc. Capital will also get virtually complete American instrumentation, communication, and navigation equipment as well as interior furnishings. Included are Aerotherm Model 461 seats, Collins Radio communications gear, some Sperry instruments, etc.

Capital's Viscounts will be 48-passenger planes using two abreast seating on either side of the aisle. Break-even load factor is cited as 50.6% on medium length route segments. The seats will be on tracks and provide for 58 passengers on coach flights.

Capital bought Viscounts to meet the stiff competition offered by the Big Four airlines, all of which parallel Capital routes and use Douglas DC-6's, Lockheed Constellations, Convairs, and Martin 4-0-4's. Buying any of these types would simply match the competitive lines. Capital expects to cruise the Viscount at 335 miles per hour and, combined with the novelty and improved comfort of turboprop operation, hopes to increase its share of the traffic.

Specifically, Capital hopes to operate Washington-Chicago 26 minutes under the best present schedule; Cleveland-New York in one hour, 31 minutes, a saving of 24 minutes; Pittsburgh-Chicago in 21 minutes less than competitive schedules. In Europe this type scheduling let BEA increase its share of traffic 15-20% on routes where the Viscount was introduced.

Capital has made a major move. They did not seek CAB opinion nor approval of the new equipment. This is academic unless they are forced to seek increased mail pay following introduction of the equipment. Then they may face the problem which confronted Braniff (see page 62).

Reds Reported Ready for Space Flights

The Russians have enough background in rocket flight to attempt creation of a space ship with confidence, in the opinion of the supervisor of North American Aviation's Downey, Calif., plant, George P. Sutton.

It is possible, Sutton declared, that if the Russians decided to launch such a venture they could make use of a cluster of giant rocket engines, each producing 264,000 pounds of thrust at sea level. These engines, which are reportedly under development now, burn liquid propellants. Each would furnish thrust equivalent to 53 turbojet engines, as used in current fighters.

The likelihood of such a project is a reflection of the "aggressive rocket policy" that the Russians have been

pursuing, said Sutton. Not only has the German V-2 missile been considerably improved by the Reds, but a variety of other rocket engines have also been brought through research and development stages into production. Applications in aircraft and long range missiles have also been under study.

The V-2 was originally capable of carrying a one-ton warhead a distance of 220 miles. The improved Russian version is described as "faster, larger, and is reported to have a range of more than 400 miles."

Sutton noted that his description of Russian rocket work was somewhat speculative and was not based on Government-sponsored research or information.

AA Fights Lee's 8-Hour Limit Petition

American Airlines has asked that the Civil Aeronautics Board deny or dismiss a petition by CAA Administrator Fred B. Lee that it be ordered to discontinue operation of Douglas DC-7 transcontinental non-stop flights in violation of the 8-hour crew flight time limitation.

Stand taken by American is that the Board's sole power to regulate crew time limits is in the interest of safety, which is not a question in the CAA petition. CAA had originally granted AA until July 1 to demonstrate that the 7 hr.-55 minute schedule could be met on 50% of its flights, but petitioned the Board for the cease and desist order on June 1 when it became "mathemati-

cally impossible" for American to meet these terms.

Both United Air Lines and Trans World Airlines have joined and supported American in a subsequent request to CAB to formally waive the 8-hour limit. CAB has since proposed such an extension to parallel the 12-hour rule in effect for international operations and has set July 1 as a deadline for comment by interested parties.

Strong opposition to the airline stand has been voiced by the Air Line Pilots Association. ALPA's executive committee agreed that pilots would have no alternative but "to refuse to fly" if CAB grants airline requests and waives the 8-hour limit.



First view of cabin of new Boeing 707 jet transport shows spaciousness of interior. Over-all plane length is 128 feet. Equipment at left is used in test program.

Push Button Logistics Urged by Adm. Horne

(See Editorial "2 MPH in 175 Years" on page 9)

Wars are won by the nation having the best supply system, other things being equal, and in a jet age our supplies still move at a pace little better than that of the Revolutionary War. This indictment of the logistics of our armed forces comes from Admiral Charles F. Horne (USN, Ret.), former CAA administrator and currently manager of Convair's guided missiles plant at Pomona, Calif.

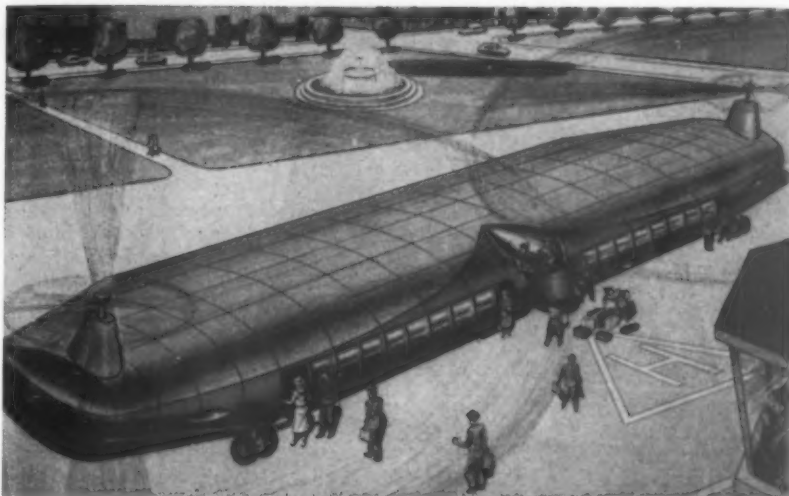
Horne told the Los Angeles chapter of the National Defense Transportation Association that a typical supply movement during the Revolution moved at an average rate of $1\frac{1}{3}$ mph. During the last war, he continued, the record for items requisitioned by units in Germany and shipped from the United States was not much better: average time for requisition and delivery was 106 days— $3\frac{1}{2}$ mph.

"To compensate for its slow-gaited logistics," said Horne, "the United States built enormous stockpiles in forward areas in World War II, and thus substituted these stockpiles for flexible logistics which were sadly lacking."

Since this method is no longer practical due to the cost of maintaining such stockpiles all over the world to meet Communist threats, we must learn to cut delay both in requisitioning and delivery, Horne told his audience. Among his suggestions were the use of electronic "memory" machines for keeping records and requisitioning supplies, and use of air transport for speeding material to the front.

"The need for . . . an electronic system is emphasized by the fact that the Air Materiel Command stocks more than a million separate items or classes of equipment—five times more than America's largest mail order company," Horne noted. "Now under development, these machines will take a field commander's requisition to the source of supply (regardless of distance) in seconds and keep a complete check-and-balance at the same time. Moreover, under normal conditions, they will actually anticipate the commander's requirements and do the ordering for him."

To enable this country to face the possibility of Communist aggression anywhere in the world on short notice and still keep a minimum number of men under arms, Horne called for "an army virtually self-sufficient for at least 30 days' operations, speedily moved by large, global transports able to fly 100,000 pounds of freight or cargo for distances of 3000 miles."



New concept in helicopters is shown above in drawing of Bell Aircraft Corp.'s design of a rotorcraft in which the thick wing serves as the fuselage, with the rotors mounted at either end. Side-by-side rotors are more efficient than front-and-rear arrangement, says Bell, particularly at the low speeds that would be encountered during one-engine-out operation. The project is in the preliminary design stage. The thick wing provides space for completely retractable landing gear, enclosed engines, and unobstructed front view for the two rows of passengers.

Sikorsky Pessimistic On Convertiplane's Role

The convertiplane will not make a satisfactory commercial vehicle, and will be primarily a military aircraft, according to Igor I. Sikorsky, chief engineer of the Sikorsky Aircraft Division of the United Aircraft Corp.

Sikorsky described the convertiplane as a fairly inefficient helicopter coupled to a fairly inefficient airplane. Despite this it has certain advantages when landing areas are restricted, and it can be designed to reach speeds as high as 600 miles per hour, he predicted.

A year-long study of the convertiplane, expected to be released by the Air Coordinating Committee in July, gave rise to other predictions by Col. William B. Bunker, U. S. Army office of transportation services. The most promising configuration for a true convertiplane, Bunker told a meeting of the American Helicopter Society, is one in which the rotors pivot through 90° to provide thrust for high speed forward flight.

Southwest Airways Case Is Local Service Test

CAB has named the Southwest Airways Certificate Renewal Proceeding as the initial test case for possible implementation of a new national local service policy in which local airlines could give way to trunk lines.

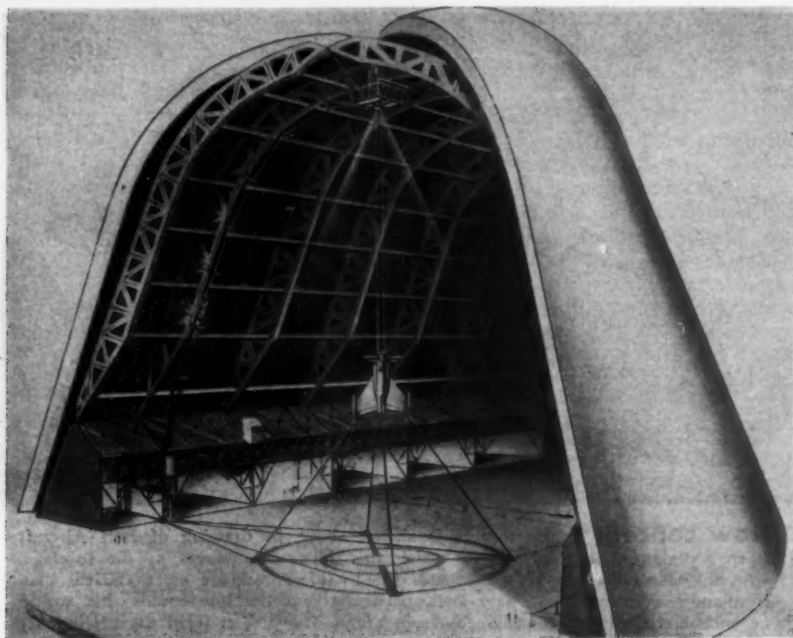
Board's action, coming on a 3-2 party-line vote, is in line with the new civil air policy of the Air Coordinating Committee which the Board also went along with during its formulation by a 3-2 vote.

Primarily at issue in the Southwest Case was an application filed recently by United Air Lines generally seeking to replace Southwest. The CAB Republican majority not only granted United's request to have its application tried in the renewal case but, noting the new policy, advised all other trunks desiring to file similar applications to do so within a 10-day period from June 9.

Lee, in his dissent to the latest action, estimated that West Coast, Trans-Texas, and Lake Central would face similar Board rulings in the immediate future since their renewal cases will soon be tried.

President Asks Airport Program of \$22 Million

A request for \$22,069,499 for resumption of the Federal aid to airports program was included by President Eisenhower in his supplemental appropriation message to Congress last week for fiscal 1955. This is \$11 million, or one-third, less than the program sent to the Bureau of the Budget by the Commerce Department. Although official confirmation of the \$33 million was never forthcoming, it had been referred to by Administration spokesmen from time to time.



TETHERED FLIGHT RIG used for testing Convair's VTO fighter, the XFY-1, is shown above in artist's sketch. Cables run to top of hangar, 184 feet from ground level, then down left wall to counterweight. Control booth is at left.

Convair, Lockheed Rush VTO Tests

Full free flight outdoors is next after tethering rig demonstration; new production designs likely

NOW THAT CONVAIR has demonstrated how its XFY-1 hovers in a tethering rig under its own power, progress is expected to be rapid in the flight test programs of this and the Lockheed vertical take-off fighter (the XFV-1) which the two companies have developed for the Navy.

Example of Convair's expedited flight program: 20 flight test operations were run off in the huge, one-time dirigible hangar at Moffett Field, Calif., in a period of approximately 30 days. The demonstration on the second day of this month, in which Test Pilot J. F. (Skeets) Coleman lifted the spectacular aircraft off the hangar floor three different times, swung it back and forth in limited hovering maneuvers, and then brought it back down in tail-first landings, was No. 21.

Lockheed can be expected to speed up on its XFV-1 flight tests now that it has received the spinner designed for the airplane. Delivery of the spinner was delayed and Lockheed ran its first taxi tests with an interim spinner installed.

At this writing, Convair is headed toward the next phase—full free flight outdoors—and is wasting no time. This means the first flight, free of the restraining cables of the tethering rig,

may already have taken place. The lapse, however, may be a little longer because Convair wants to install a new Allison T40 in the airplane before undertaking this important flight. The engine (again at this writing) is in the test stand at Allison and due for shipment soon. It takes only a day for an air freight shipment from Indianapolis.

Convair plans to take the XFY-1 to Brown Field, an auxiliary field for the Miramar Naval Air Station near San Diego, for continuation of the flight program at a more convenient location. But the first flight may take place at Moffett before the move.

The Convair and Lockheed contracts with the Navy are almost identical. Each calls for one flight article and a second one for static tests. Neither has any commitment for a production order, or even for any additional development, but both seem to have a hunch that they may get something in the way of a preparatory production contract.

If production ultimately follows, it undoubtedly will be a new airplane rather than a production version of the experimental plane. In the first place, the XFY-1 (Convair) and the XFV-1 (Lockheed) are designs which are four years old now. Moreover, the two man-

ufacturers are going to accumulate a wealth of information from their experiences with the experimental planes, and they can be counted upon to have many new ideas.

You can get all kinds of comment on the practicability of a vertical take-off aircraft. The Navy, obviously, thinks the idea is worth exploring. It originally became interested in a VTO design as a possible convoy escort fighter. Now you hear the VTO fighter advanced as a possible ground support plane.

It may be the enthusiasm of Test Pilot Coleman, who comes right out with predictions of great things to come, or it may be the good luck Convair is having in moving ahead on its test program, but there are definite indications Convair is getting more excited over VTO prospects.

Convair's use of the tethering device for preliminary flight tests is one of the more unusual features of the XFY-1 project. Lockheed is using a completely different technique. It has devised a lightweight landing gear of the conventional type so that the ship can be taken off from the runway at Muroc (Air Force Flight Test Center) in the conventional manner and taken to 10,000 feet, also in conventional climb, before vertical maneuvers are attempted. Lockheed says design of the landing gear is such that it will have little aerodynamic effect in the vertical pattern.

Convair conceived the idea of tethering flight when it learned it could make use of the steel hangar the Navy built in 1933 to shelter the USS Macon. It enabled Convair to install a 184-foot rig in which a system of cables could be strung through pulleys and hooked to an electrically controlled drum to control the plane during vertical taxi runs. A counterweight running on a track down the wall of the hangar keeps nose cables taut and out of the way of propellers.

In demonstrating the plane for the benefit of the press and newsreel and television cameras, Coleman pulled the XFY-1 up to about 60 feet above the floor. Previously, he said, he had climbed to about 90 feet. He left no doubt in the minds of viewers that the plane was airborne under its own power and without support from the cables by climbing faster than the counterweight and thus creating slack in the cables.

Both the Convair and Lockheed VTO craft are powered by Allison's T40 engine, which develops the equivalent of 5,500 hp. The same type six-bladed Curtiss dual rotation turboelectric propeller is used on each airplane.

NACA Shows Off New Thrust Reverser

Lewis Lab device rolls F-84 backward in special demonstration; atomic power is major project

CLEVELAND—Lewis Flight Propulsion Laboratory scientists showed at the 1954 triennial inspection that this National Advisory Committee for Aeronautics facility is working on short-range aircraft projects like reverse thrust as well as on long-range jobs like atomic-powered aircraft engines.

The NACA reverse-thrust displayed was mounted on a Republic F-84 Thunderjet and succeeded in causing the plane to roll backward as the pilot revved up the Allison J35 engine. NACA's installation differs from similar projects being developed by the French and Swiss and by Fairchild and Boeing (AMERICAN AVIATION, April 12) in that a double set of blades is fitted in the tailpipe of the jet. When not in use, these blades are closed to impose minimum drag. Otherwise, they can be opened to a maximum of 140 degrees hydraulically and can reverse up to 50% or 60% of the thrust. Forward thrust loss when the blades are not in use is about 2%, NACA project engineers report.

Weight of the prototype device installed on the Thunderjet at Lewis is about 250 pounds but it was said that a production model would add only 150-200 pounds to any engine.

Advantage of the device was cited by NACA as being able to stop a jet bomber or transport in less than half the normal distance on either dry or icy runways. Example:

	Dry	Icy
	(in feet)	
Normal Landing Run	6,000	11,000
Zero Thrust	4,000	7,700
10% Reverse Thrust	3,500	6,000
35% Reverse Thrust	2,200	3,500

And distances could naturally be made shorter if the amount of thrust reversed was up to 60%.

NACA-Lewis' work on atomic powerplants, in cooperation with the Atomic Energy Commission and the two USAF atomic engine contractors (General Electric and Pratt & Whitney), is naturally still highly classified. But researchers here, with AEC approval, gave the press and other invited guests some idea of the problems to be overcome and some of the tentative solutions.

Because one pound of uranium subjected to fission produces as much energy as the burning of 2,000,000 pounds of gasoline or 3,500,000 pounds of coal, it becomes possible for an atom-powered aircraft to take off, fly to any spot on earth, and return to its starting point without having to refuel. But what methods will be employed to use U-235 as an aircraft fuel?

Simplest is to use the atomic reactor to do the air-heating job in a turbo-jet engine instead of the usual combustion chambers (which burn chemical fuel). This is not too effective because the rate of heat-transfer is low and supersonic flight involves the use of large reactors and a resultant demand for considerable shielding.

Another approach entails the use of liquid coolants for the small reactor to transfer the heat to the air in the engine using a second heat exchanger.

Biggest dilemma here is to find a cooling fluid which will do its job satisfactorily without interfering with the efficiency of the atomic engine. In addition, the reactor parts (fuel element parts, heat exchangers, etc.) must have high strength at high temperatures, satisfactory resistance to corrosion, and ability to withstand strong radiation.

Other current Lewis projects described by NACA scientists:

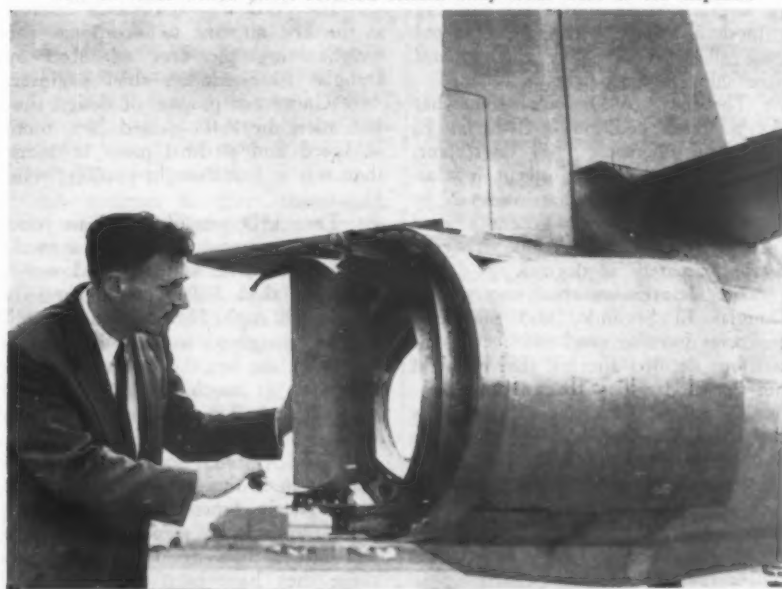
- Use of new fuels to give jet engine afterburners and ramjet engines more power. One of the more successful: propylene oxide, which gives higher performance than JP-4 jet fuel and can maintain a flame at much higher air velocities. Such fuels could make existing jet engines almost twice as powerful, it was stated.

- Updating of Fairchild C-82 crash-fire tests by hanging jet engine pods on the Packets to simulate present jet bombers. Tests have shown that water placed under pressure for automatic release at a few locations will keep jet engines from igniting despite a crash.

- Construction of an experimental airplane seat to determine whether crash-survival requirements can be met within space and weight limitations.

- Attempts to find satisfactory high-melting-point ceramic and metallic materials to be used in hypersonic missiles. At Mach 10 (6600 mph), for example, where certain future missiles will be operating, temperatures will melt any present materials and will even vaporize diamonds. • • •

WHEN PRODUCING REVERSED THRUST, plane's exit shape alters as a pair of curved vanes moves into stream of hot gases. Small photo at lower left shows view of vanes which direct reversed stream away from sides of the airplane.





NEEDLE NOSE is on first A4D only for tests. Others will be elliptical and house radar gear.

Navy Gets A4D's, "Smallest" Combat Jet

DOUGLAS AIRCRAFT CO.'s El Segundo Division is now in production on a second jet attack bomber for the Navy.

It's the lightweight, single-place A4D Skyhawk, which has been the source of much speculation since it became known that Douglas was at work on the plane. First ship is now in flight test at Edwards Air Force Base.

In a way, the A4D may be said to take over where the twin-jet A3D leaves off. Both the A3D, powered by two P & W engines and having a gross take-off weight in the area of 75,000 pounds, and the A4D, powered by a single Wright J65 and weighing around 14,000 pounds, are designed to be carrier-based and to carry an atomic bomb.

Difference is that the A3D carries a multiple crew and is fitted to carry the old, bulkier A-bomb. It needs more deck and can be operated only from the largest carriers. The A4D, carrying a modern A-bomb, can be operated from all sizes of Navy carriers and from short landing fields.

The new A4D looks somewhat like a smaller edition of Douglas El Segundo's supersonic F4D interceptor. It also incorporates the swept low aspect ratio wing that has come to be described more or less generally as a "modified delta wing." Angle of sweep is approximately 32 degrees.

Ed Heinemann, chief engineer of Douglas El Segundo, said the A4D engineers were tempted to leave off the tail, but decided after all that it might not be good policy to experiment.

When the A4D was announced by the Navy, Douglas described the plane as "the smallest and lightest U. S. jet combat plane ever built." Neither specifications nor performance were disclosed, but wing span appeared to be no more than 25 feet. The span is within Navy limits for carrier opera-

tion without folding wings, a feature saving several hundred pounds.

The A4D is estimated to be in the 600/650 mph class and therefore it is a subsonic aircraft, but it is capable of supersonic velocities in dives. Heinemann described it as "faster than the MiG."

Range Is Long

Douglas reports the A4D has a combat radius greater than present propeller-driven attack planes. Equipped with external tanks, the AD attack planes now being produced by Douglas can be flown across the country non-stop.

Unique feature is that the Navy gave Douglas a service test quantity contract before a plane was built and the A4D turned out thus was also the first production plane off the line. A second plane is on its heels and half a dozen others are right behind.

The A4D also commands interest as the first airplane to incorporate the weight-saving measures advanced by Douglas El Segundo's chief engineer.

"Under our program of design simplification the A4D gained 20% more in speed and a third more in range than was at first thought possible," said Heinemann.

The A4D was designed to come within Navy requirements for a small-size attack plane which would weigh not more than 30,000 pounds and fly at least 500 mph. How well the simplification program worked is demonstrated by the fact the A4D weighs less than half as much as the Navy had allowed and flies 100 mph or more faster.

"The A4D is believed to be a major step in designing an airplane on a completely functional basis, making each requirement stand on its own feet rather than by doing things because they have been done that way

in the past," said Heinemann.

Samples:

- The A4D has less than half as many parts as the current AD attack plane series.

- The A4D ejection seat has 80 parts and weighs 40 pounds installed as compared to 240 parts and 92 pounds for the ejection seat in the F4D, which itself had been simplified.

- One communications package, including the IFF, and weighing 105 pounds loaded, takes the place of four boxes and cuts down on plugs and cables, saving approximately 55 pounds.

- The cooling turbine designed by AiResearch weighs less than six pounds, or one-third the weight of the previous turbine installed in the F4D.

- Dual equipment is dispensed with in the A4D. "When you rely on a duplicate system, all too often it doesn't work," said Heinemann. "We've concentrated on quality and in making sure the systems we have are dependable."

Finished In 18 Months

The A4D was factory-finished in 18 months. It was mocked up in October, 1952, and engineering started in November of that year. Most planes take two to three years to develop.

With design simplicity also keyed to producibility, the Navy will be able to get, on a production order, 2½ times as many planes for the same amount of money, T. E. Springer, vice president and general manager of Douglas El Segundo, said.

These are features of the A4D outlined by Douglas: (1) Increased performance; (2) Reduced gunfire target; (3) Reduced radar target; (4) Increased producibility; (5) Ease of maintenance; (6) Lower initial cost; (7) More per carrier; (8) Less fuel required.

The A4D also has electronics gear for day and night operation under all-weather conditions.

• • •

News Briefs

MANUFACTURING

Backlog at Lockheed-Marietta may reach 50% of the company's total by the end of the year. California division's total is being reduced by \$40 million to \$50 million a month . . .

Issuance of 577,551 shares of common Fairchild stock has been approved by the firm's board of directors to provide for general corporate purposes and recent expansion of facilities . . . **Douglas is hiring workers** at Tucson, Ariz., where it has taken over three hangars formerly occupied by Grand Central Aircraft Co.'s B-47 modification center . . . **Tenth anniversary** of the Lockheed F-80's first flight fell on June 10.

Continuing difficulties with Piasecki's H-21 tandem-rotor helicopter are bringing "major adjustments in overall operations," including lay-offs . . . **A plan for a third round** of expansion in the aluminum industry has now been discarded by the Office of Defense Mobilization. A drop in aluminum requirements of military aircraft manufacturers and an improved supply of the metal are cited as reasons . . . **RCA's new airborne weather radar** (AVQ-10) will be in production by the middle of next year, and prototypes will be flying this year. The equipment was developed as a result of an RCA-United Air Lines test program conducted during 1953.

Three new members of the Aircraft Industries Association have been announced: Chase Aircraft Co., Willow Run, Mich.; Hoffman Laboratories, Los Angeles; and Rheem Manufacturing Co., Downey, Calif. . . . **Turbojet and turboprop** transports will both come into wide airline use, according to Donald W. Douglas, Jr., vice president of Douglas Aircraft Co. Both types will eventually achieve reliability comparable to that of piston-engine types, he predicted . . . **The tenth annual forum** of the American Helicopter Society in Washington, June 24 through 26, will feature 38 booths of exhibits from subcontractors, helicopter airframe manufacturers, and helicopter engine manufacturers.

AIRLINES

Suit against the airlines serving Newark Airport and the Port of New York Authority by five New Jersey towns will be filed by mid-July, according to counsel for the Newark Mayors' Committee. The plaintiffs will seek "restraint against operation of the airport in a manner that creates the alleged nuisance and trespass." . . . **Long**

range outlook for United Air Lines is good, even though the intermediate trend is not as bright, in the opinion of John H. Lewis & Co., New York financial firm. On the encouraging side of the balance are United's strong route position, adequate financing, and sound record of growth in demand.

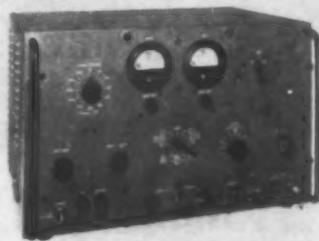
Probable cause of the crash of a Piedmont Airlines DC-3D last February 28 at Bristol, Tenn., has been described by the CAB as "the action of the pilot in not following approved procedures for an ILS approach." Though there were no injuries, the plane was substantially damaged. . . . **Aviation legislation** attracted fewer lobbyists during the first quarter of 1954, according to reports filed with Congress. Number of registered individual lobbyists dropped to 15 from 21 for the same period one year ago.

CAB criticism of flying techniques that preceded the crash off Puerto Rico of a Pan American DC-4 in 1952 has drawn fire from the Air Line Pilots Association. ALPA objects that the action taken by the pilot was in line with recommended procedures and urges that CAB "reconsider and revise" the report . . . **Delivery of Seaboard & Western's first Lockheed L-1049B** is scheduled for July. Three more of the 18-ton cargo aircraft will be delivered at two-week intervals thereafter.

MILITARY

Three locations recommended as sites for the USAF's Air Academy will be inspected by Air Force Secretary Harold Talbott in person. Possible settings are Alton, Ill., Colorado Springs, Colo., and Lake Geneva, Wis. . . . **The Military Air Transport Service** celebrated its sixth anniversary on June 1 by completing a 17-month period with no fatal accidents. During that period it had carried more than 731,000 passengers and patients.

A contract to carry more than 3000 military dependents from the Far East to California has been given to Transocean Air Lines by the Army. The operation will involve flying more than 3.5 million passenger-miles. . . . **Use of asphalt paving** instead of concrete in certain locations could save the Air Force an estimated \$50 million, according to Rep. William E. Hess (R-O.). Hess based his statement on the findings of the House Armed Services subcommittee which he heads. Asphalt industry spokesmen have recently charged the Air Force with discrimination in ordering concrete for installations.



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Marshal of the

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Will Prevent Total War

Marshal of the Royal Air Force Sir John Cotesworth Slessor, GCB, DSO, MC, succeeded Lord Tedder as Chief of the Air Staff on January 1, 1950, and relinquished the post on December 31, 1952. Now he has written "Strategy for the West" (William Morrow and Co., New York), a book which examines the concept of total war in the Hydrogen Age. Its controversial arguments promise to become as significant in our time as the theories of Mitchell and Seversky were in theirs. In this exclusive interview *AMERICAN AVIATION* presents some of the opinions which have won Sir John Slessor the reputation of being one of the world's great military analysts.

At the outbreak of World War II John Slessor (then an Air Commodore) was at the Air Ministry as Director of Plans. During the winter of 1940-41 he was on special duty in the United States and was the British air representative on the first Anglo-American staff conversations. In 1941 he was promoted to the rank of Air Vice-Marshal and in May of that year was given command of No. 5 (Bomber) Group, the spearhead of the attack on Germany.

In February, 1943, he was promoted to the acting rank of Air Marshal, on being posted as Air Officer Commander-in-Chief, Coastal Command. In 1944 he became Commander-in-Chief of the RAF in the Mediterranean and Middle East and deputy to General Eaker, commanding the Mediterranean Allied Air Forces. Early in 1945, he was called home to be Member of the Air Council for Personnel. He remained in this appointment until he went to the Imperial Defence College as commandant in January, 1948.

Born in India on June 3, 1897, and educated at Haileybury, John Slessor joined the Royal Flying Corps in 1915. During World War I he saw service in France, Egypt, and the Sudan. He was granted a permanent commission in the RAF in 1920. In 1936-37, as a wing commander, he took part in the Warzistan operations in command of No. 3 Indian Wing of the RAF.

Q. What do you consider to be the major considerations regarding the nature of the next war and how do these dictate the defense requirements of the West?

A. My view is that the "next war"—if by that you mean World Total War—would be so much a matter of mutual suicide that the primary defense requirement of the West is to prevent it happening. That we can do—and can only do—by being so strong in that decisive arm of atomic and thermonuclear air power that no aggressor will dare risk it.

Q. Do you feel the next war will start with a major assault, such as an assault on Europe, or will it occur on many fronts further to disperse our forces?

A. This question assumes that there will be a "next war"—which I don't believe. But if I'm wrong, I don't see how anyone can give a worthwhile answer to that question. The most I can say is that I can't see another total war happening without a major assault on Europe. But I have no doubt that at the same time there would be attacks elsewhere—in Asia for instance, and by air against the United States—to make us disperse our forces.

But the point on which we should be crystal clear—and on which we should allow no doubt to arise in the minds of our potential enemies—is that any major assault on the free world *anywhere* will instantly bring down upon their heads Mr. Dulles's "massive retaliatory power."

Q. Is there a likelihood that the European countries, facing the choice between annihilation or neutrality, might abandon the NATO aims to prevent annihilation?

A. I can't answer that, because I don't believe there can be any such thing as neutrality in another world war. In Europe the choice would surely lie between accepting fearful sufferings with a chance of coming out on top in the end, and occupation by the Red Army—which would be a particularly unpleasant form of annihilation for most people. The idea that any European nation could, so to speak, cross its fingers and say it wouldn't play *and* then have its neutrality respected, seems to me completely unreal.

Q. Then you still attach importance to NATO?

A. Certainly—I think it is a vital part of the armor of the free world as much in the cold war as in the unlikely event of it blowing up into a hot one. Strategic policy is never a simple, straightforward matter for *one* arm alone—don't expect atomic air power to do everything. It is the great deterrent and would be our decisive instrument in a hot war, but it must be supplemented by what it is fashionable nowadays to call "conventional" forces. You must have troops on the ground and tactical air forces on the frontiers of freedom—in Europe as much as anywhere.

Q. The NATO nations, exclusive of the United States, have ignored medium- and long-range bombers. Do you agree with the policy which justifies this segregation of defensive from retaliatory and offensive attack?

A. I'm afraid the question isn't accurate. The RAF is giving the highest priority to Bomber Command, and our four-jet bombers which will soon be in the service are as good as any in the world. And you know from last time what the quality of our bomber crews is like. It's true, of course, that we can't compete with the U.S. in *numbers*. But in quality we are second to none and Bomber Command is an invaluable component of the allied striking force.

I'm a tremendous admirer of Strategic Air Command. I doubt if there has ever been a more highly trained or technically efficient or generally more battle-worthy force

"Forrestal carriers . . . an appalling waste . . ."

—all there ready and fit in peacetime. But I'm sure General Le May would be sorry to think that he would not have Bomber Command as a partner if it came to war.

Q. What is your feeling toward the apparent decision of NATO countries and even the U.S. and Britain to concentrate on defensive military programs with a very little attention to offensive requirements?

A. I'm afraid I don't agree that we are doing that. The U.S. and Britain are *both* giving high priority to the decisive offensive arm. But then again—we can't afford to ignore what you call our "defensive military programs." Remember, this threat of militant Communism is a global threat—it is not only in Europe—and it must be met by global defenses. There are circumstances, and parts of the world, in which we shall have to meet what I call limited aggression, and we must meet it with "limited" defensive measures. It would be crazy to counter every minor attack by blowing it up into a world war. Atomic air power is not a panacea for all evils.

Q. Do we need a defense alliance in the Pacific comparable with the NATO organization? Are the U.S.-Australian negotiations a good start in this direction?

A. Yes I have always thought so and, as you know, things seem to be moving that way. But this is a field in which we have got to tread very warily. For goodness sake don't let's give the impression that the West is trying to "dominate Asia." That makes no sense—even if we had the strength, which we haven't. These great new Asian states, like India and Pakistan, can be a real force for stability in Asia, but they don't see the problem of Asia in quite the same clear-cut, black-and-white perspective as some people in the U.S. seem to. I think the freedom of Asia is the job of the Asians—with our moral and material support, but they should be encouraged to take the lead. And that means very tactful handling.

I'm inclined to think there should be two regional arrangements in that part of the world—an extension of ANZUS in the Pacific and Far East, to include Great Britain and France and such Asian states as may be willing to join; and another, which will be a longer term affair and will come more slowly, in the Indian Ocean and south-east Asia area—primarily an Asiatic affair.

But we shall only defeat ourselves if we try to rush that too fast. And I'd like to take this opportunity of airing a favorite bee in my bonnet. I don't believe we shall get to first base until we can get back to something like the traditional decencies and patience and reticences of the old diplomacy. I don't believe we'll ever eliminate the suspicions and mistrusts, the wants and hates and fears that are the things that really lead to war, by the methods of what passes for diplomacy nowadays—the diplomacy of the press conference, the headline, the television screen, and rushing about the world in airplanes at a moment's notice—particularly when we are dealing with Asiatics. And remember the Russians are half Asiatics.

Incidentally, I think the U.S. would do well to consult the British Commonwealth in such matters rather more than it does. After all, there are many more Asiatics than people of European stock in the Commonwealth.

Q. What are your feelings on the advisability of re-arming Germany and Japan? What are some of the precautions to be taken if these build-ups are to occur?

A. I'd like to answer that by asking another question or two. Do we want Germany and Japan to be part of

the free world? If so, do we intend to defend them permanently with British and American forces, or should they be in a position to take their own share in the defense of the free world, of which they are to be a part?

If you ask—do I think it is safe to do so? I'd say—no, of course it isn't safe. Nothing is *safe* in this dangerous world. It's a question of balancing risks—is it less safe than trying to keep these two great powers in a state of permanently disarmed subordination?

Besides, there is the more practical issue—to use a vulgar simile. I don't think you can expect people to join a club and refuse them access to the bar because they might get drunk. It's a risk you have got to take. If you won't take it, then don't have them in the club—but then you must face the virtual certainty that it's only a matter of time before they join the rival club across the street.

Russia Control the Seas?

Q. Do you share the belief that Russia's superior submarine force would gain control of the seas during the early stages of the next war and cut the strategic supply line, and do you feel that the Allies are giving this threat its proper weight in planning their defense programs?

A. I think we might have a very tough time dealing with the U-boat threat. I'm inclined to think that the mine, and the atomic bomb on (or in) the terminal ports, would be even more of a menace than the U-boat. But we certainly should not underrate the latter—and I don't think we do so in England. I confess I'd like to see a higher proportion of U.S. naval effort allocated to insuring the safe and timely arrival of convoys in British and European ports, and less to those great carrier task forces—particularly the Forrestal carriers which I regard as an appalling waste of money.

But of course this leads one into guesswork about the nature of another war, which my imagination hardly runs to. I cannot see it lasting anything like as long as the last two. And I'd have thought there were important developments probable in the coming years which will reduce our dependence on seaborne imports in war. For instance, a sensible stockpile policy and, in due course, the development of indigenous nuclear power for purposes for which we now need oil. I think we could grow more food off our land in England. And I don't think we should under-rate the possibilities of air cargo carriage in an emergency. I believe the big air freighter—not necessarily very fast but with engines, such as the compound, which are very economical in fuel—has a tremendous future. Still, we'll be dependent on seaborne imports for as long ahead as we need look.

Q. Do you feel that anti-submarine activities should be the exclusive role of the navy or is it in order for the air force to assume part of this task?

A. As an ex-Commander-in-Chief, Coastal Command, I naturally think the air force has a tremendous part to play. I think (with the sole exception of the carrier-borne aircraft) the man who fights in the air should be in the air force, and it doesn't matter whether he fights against a U-boat or a tank or an airplane. There's no high-water mark in the air and no black art about maritime warfare. Experience last time shows that it is absurd to pretend

(Continued on page 27)

Eclipse-Pioneer Polar Path marks a new high in navigation efficiency

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that a man can't be a highly efficient maritime airman without being born in a naval barracks and bred in a naval school.

Q. Do you feel that each of the military services, including the army and navy, should have its own air force for unrestricted operations, or should all airpower be concentrated in a single force?

A. There is no better way of wasting public money than having three or four separate air forces. I think that as long as there are carriers—which won't be very long as these things go—the aircraft that actually go to sea in ships are more conveniently part of the navy. But they should be a very small proportion of the whole.

For the rest: What was wrong with our system in the last war? Our tactical air forces worked admirably with the Army without being commanded by soldiers. Field Marshal Montgomery is one of the strongest advocates of that system. And as for maritime warfare—well, I may be prejudiced, but I think our Coastal Command system worked admirably, and our relations with the Royal Navy could not have been closer. Anyway, no one can say we did not deliver the goods in the way of killing U-boats. Admiral Doenitz certainly thought so, and the customer is always right!

Don't Divert Navy

Q. Would you comment on the role of the super aircraft-carrier in the event of an atomic war?

A. I'd like to quote Dr. Vannevar Bush at you on that. In his book "Modern Arms and Free Men" he wrote five years ago: "The primary mission of our Navy in war is to interrupt enemy sea commerce and make it possible for our commerce to move rapidly to supply our allies and our fighting forces overseas. . . . Certainly until we have the means fully in hand for discharging the primary mission it would be foolhardy to seek out new tasks for great ships, such as participation in strategic bombing, merely for the sake of having great ships. Their cost is large and their impregnability questionable. On the other hand, if there is an essential aspect of strategic bombing that can be effected only from carriers and if they can be defended with reasonable effort and assurance, by all means build them before it is too late."

Well—I don't think there is an essential aspect of strategic bombing that can be effected only from carriers. And I don't think they can be defended with reasonable effort and assurance. I'd like to see the U.S. Navy sticking to its primary mission and not being "diverted by the sirens of more spectacular fields" to quote Dr. Bush again.

Q. There appears to be a scramble for air bases around the world on which to base our inter-continental bombers and long-range fighter escorts. Do you consider this policy of establishing far-flung air bases a necessary and wise one?

A. Yes, of course, it is. A bomber force is no good without its bases.

Q. What about proposals that European nations establish a central training program for all military training?

A. I'm afraid it doesn't make sense to me. It's all right in theory, but we are dealing with human beings with

all sorts of different backgrounds and traditions and temperaments. It's difficult enough to standardize *weapons*—it's impossible to standardize *men*.

I'd say higher training must be standardized to the extent that you could, when necessary, transfer—say—a British corps to an American army or a French wing to a British group, and they would be able to cooperate with each other in action. That I think is pretty well taken care of in NATO by General Gruenther and Air Marshal Embry and the rest. And at sea we have had many examples of Allied ships and squadrons working together in one fleet.

Q. Would you comment on the major weapons of our next war and the relative importance of each, i.e., inter-continental bombers, the various types of missiles, atomic artillery, etc.?

A. You use that expression "next war" again. I think the "next war" (and the next after that) will be small wars rather than the Korean model. That, as Mr. Dean Acheson recently said, is the only sort of war we—the world—can afford. As for the relative importance of weapons—well to my mind the first priority must go to the long-range bomber, whether it's the manned bomber of today or the long-range controlled missile that one day will take its place. And the reason is that it is only the long-range bomber that will prevent the next war being World War III and the end of civilization as we know it today.

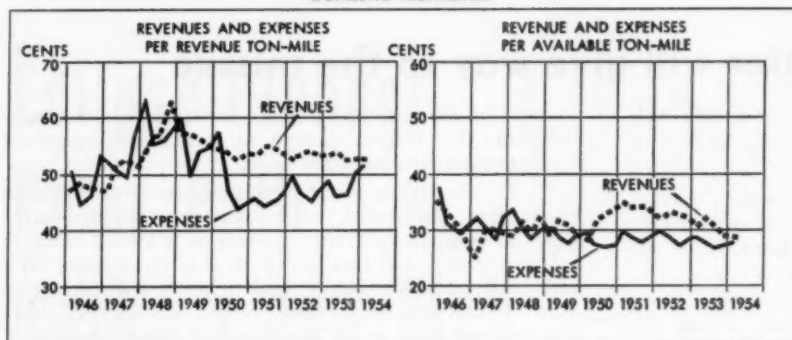
In these smaller wars the job of the bomber will be the big stick in the background—to keep them small and prevent the relatively minor incident blowing up into atomic Armageddon.

But I think it follows from what I've said before that we must have a *sufficiency* of the other weapons, like atomic artillery. I see no reason why atomic artillery or the tactical atomic bomb should not be used in these small wars—that's merely a matter of using one gun or one fighter-bomber to do what a thousand were required to do in the old wars. The crux here of course (as it usually is in this sort of matter) is that of *priorities*, of allocating the right proportion of that part of the gross national product that we are prepared to set aside for armaments, to the various arms. The thing to remember there is that if we try to be 100% strong in every arm we shall be strong enough in no arm. We can't afford any luxuries—certainly not the luxury of sentiment. We must cut back ruthlessly on those parts of the national military establishment—particularly the "frills" and the administrative "tail"—that are not absolutely *vital* to our survival or to our capacity to defeat an enemy if it comes to hot war.

Q. Would you comment on the relative roles of missiles vs unmanned aircraft?

A. What is the difference between a missile and an unmanned aircraft? I think eventually the manned fighter will give way to the missile—not the relatively short-range missile, but the unmanned interceptor with a range of, say, 150 miles. And it is most important that the West should not lag behind in the development of the really long-range offensive missile—the unmanned bomber—with the atomic warhead and a reasonable accuracy. I'd say that should be top priority for research and development because the days of the ordinary manned bomber, even at high speeds, may be numbered. . . .

OPERATING EXPENSE AND REVENUE PER TON-MILE DOMESTIC TRUNKLINES



THE NARROWING GAP between revenues and expenses per ton-mile is shown in both of the charts above, from 1946 up to the present.

CAB Rules Out Airline Rate Change

Action would be premature, Board declares, after presentation of Air Transport Association study.

THE CIVIL AERONAUTICS BOARD has ruled out the possibility of the domestic scheduled airline industry effecting any immediate change in the basic passenger fare or cargo rate structures. In so ruling, the agency concluded it would be "premature" to "rush into" consideration of basic fare changes on the strength of an economic study presented by the Air Transport Association which shows that a downward trend in airline earnings will continue in 1954.

Presented by Johnson

The ATA study, important phases of which are highlighted by the illustrations on these pages, was presented personally before the Board last month by ATA President Earl D. Johnson. A specific request was made of the Board for permission for the airlines to conduct joint discussions concerning methods of increasing revenues.

In the absence of Board permission, such joint discussions could violate provisions of the anti-trust laws.

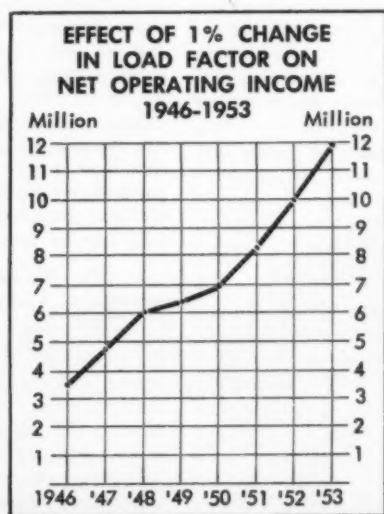
CAB had no objections to permitting discussions on "related" matters such as "the development of additional promotional fares, modification in the terms of existing promotional fares, methods of more effectively dealing with the no-show problem, and the like where joint action may aid the carriers in increasing revenues without any basic effect in increasing the level of charges to the public."

For such talks, it gave the industry, trunks and local service carriers 45 days of grace.

But the reasons which last year

helped the airlines avert a possible enforced fare cut came back to haunt them in the recent Board order ruling out any immediate fare increase. In May, 1953, a CAB majority dismissed the then-pending General Passenger Fare Investigation, with its fare-reduction implications, on grounds that high earnings in one year do not warrant an immediate fare cut.

At that time, the Board found that the "long-term" view must be taken. It remained consistent in the new decision by holding that "changes in basic fare and rate levels should not be too closely tied in to short run fluctuations in earnings."



IMPORTANCE of load factor is shown above. Drop of only one per cent would decrease net income over \$12 million.

The ATA proposal indicated that airlines' earnings started to fall off during the second quarter of 1953 and show no signs of letting up. It is always the responsibility of management, Johnson told CAB in May, to maintain strict control over costs and to continually seek new ways of improving the carriers' operating ratio and profit margin.

Must Seek Other Means

"However," he said, "our studies indicate that economies from these sources cannot be of sufficient magnitude, nor achieved soon enough, to offset the unfavorable trends already in motion. Therefore, we feel it is essential that additional means of increasing revenues be sought."

"The industry can appropriately do so, since its passenger fares have increased only 5% since 1938, as contrasted with increases of over 27% in the case of bus operators and over 34% in the case of the railroads."

CAB, however, looked at it his way: "While earnings have declined, the available evidence is not convincing that this downward trend will continue. It is worthy of note that while unit costs have remained stable or slightly declined, and while traffic has continued to increase, load factors, and, as a result, earnings, have declined."

Changes Premature

"In a situation where industry earnings appear to be declining primarily because the growth of industry capacity has temporarily exceeded the growth in its traffic it would appear to be premature to rush into a consideration of basic fare changes as a remedy for the dislocation."

"Moreover," the agency continued, "whatever may be the precise cause of the recent decline in earnings, we do not believe that either the Board or the carriers are justified in predicated changes in basic fare or rate levels upon a short run appraisal of the industry's economic status."

Prior to the Johnson proposal to the Board, there was no general industry agreement on whether fares should be increased or not, but there was apparent agreement on holding joint discussions to consider methods of increasing revenues.

Some lines advocated increases in the basic first-class fare structure to widen the spread between the 6.1¢ first class level and the 4.45¢ coach level. Others were considering upping both levels.

There was also opposition to such increases and suggestions were made for dropping the current 5% discount

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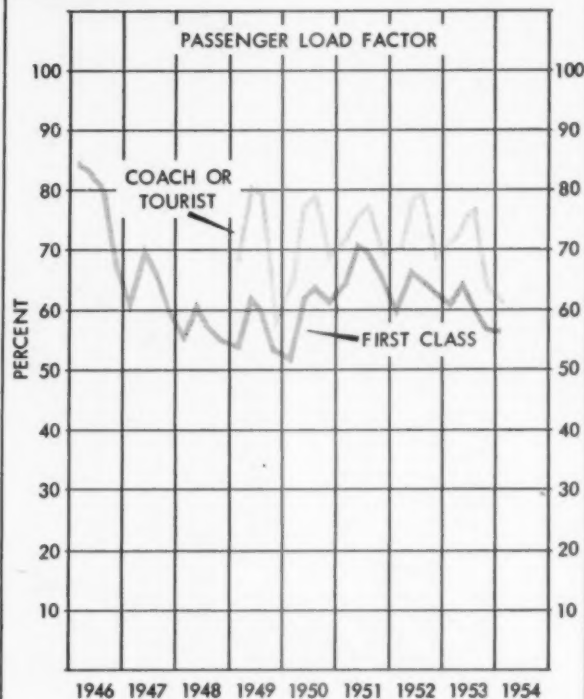
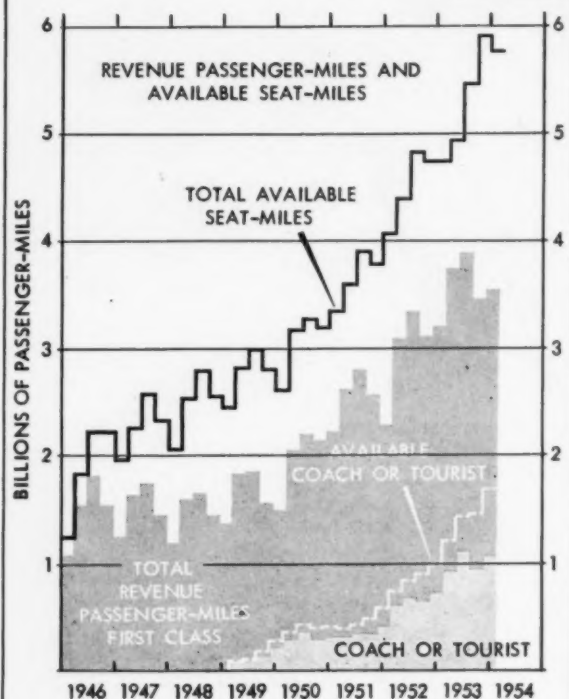
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DOMESTIC TRUNKLINES



GAP BETWEEN AVAILABLE AND REVENUE seat-miles is shown at left. At right, load factors hover around 60%.

for round-trips, cutting the discount for Family Plan travel, or imposing certain-type penalties for so-called "no-shows."

It was on the basis of such varied views coupled with the downward economic trend that the industry, through Johnson, went before CAB to get the necessary permission to sit down jointly

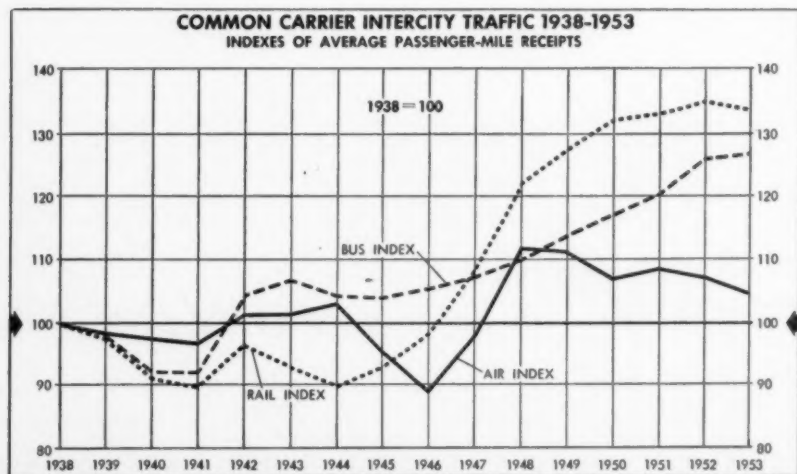
and solve the problem.

It was not all in a lost cause for the carriers however. CAB did grant the 45-day period for talks of a limited nature and did not close the door finally on broader aspects of the proposal. "It should be understood," the agency concluded, "that our refusal to grant the broader permission requested

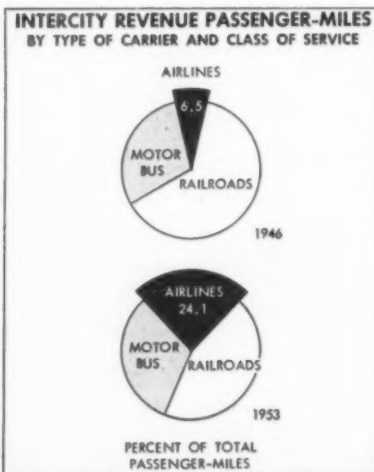
at this time is without prejudice to a renewal of such request at such time as the necessary showings can be made.

"In the meantime, the Board will, of course, carefully observe the economic trends in the industry with a view to initiating action at such time as in its judgment the facts so require."

• • •

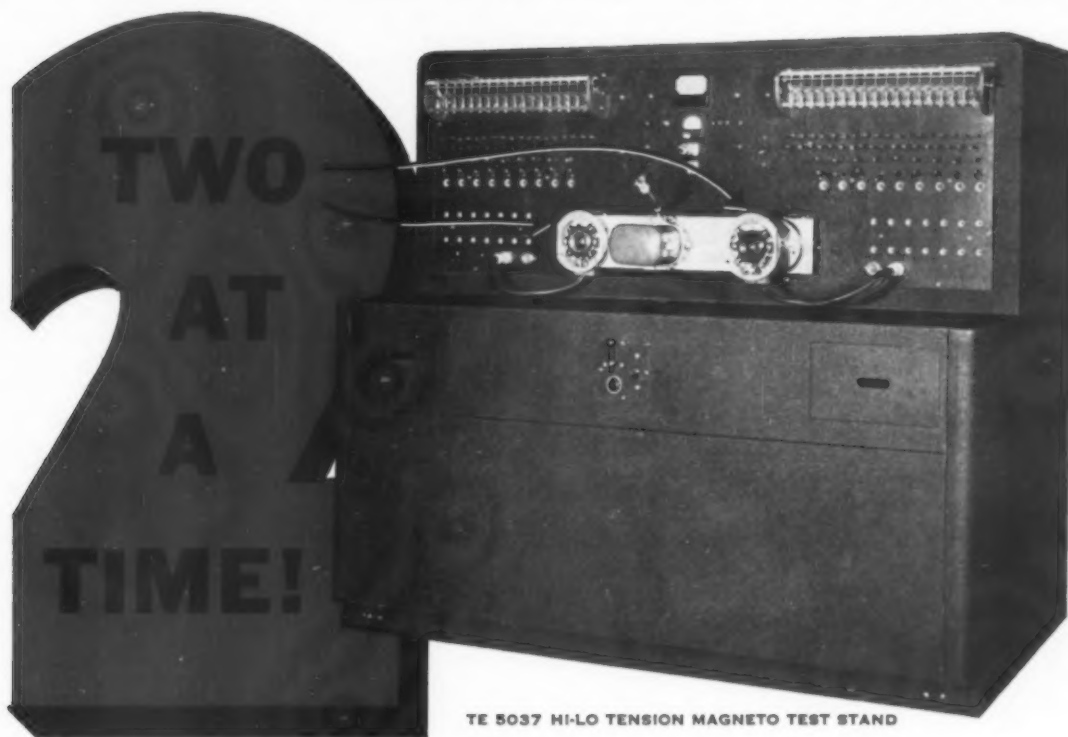


AVERAGE PASSENGER-MILE RECEIPTS have risen less for airlines since 1938 than either bus or rail fares. Charts at right show how the air share of intercity travel increased between 1946 and 1953.



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Lockheed After Production Orders for T-33B

New universal trainer uses sensing elements, servo system to simulate any fighter aircraft

By FRED S. HUNTER

LOCKHEED Aircraft Corp. has submitted a proposal to the Air Force on its new, improved T-33B jet trainer and is very hopeful of obtaining a production order. A similar proposal is to go to the Navy.

The prototype ship is now undergoing additional flight testing at Palm-dale following its return from a demonstration tour of a dozen or more key Air Force and Navy training bases.

One reason for Lockheed's optimism is the favorable response received from questionnaires filled out by military pilots who tried out the demonstrator during the tour.

Lockheed says that after an initial quantity of airplanes the price of the improved T-33B will be almost the same as that of the T-33 (Navy version, PV-2) currently in production. That means a price of less than \$100,000, not counting engine.

Moreover, in addition to fulfilling the requirements for both the Phase III Basic Training and Phase IV Advanced Training curriculums, the T-33B design is aimed toward performing the new role of a universal trainer. By adding sensing elements coupled with a servo system, the T-33B can be made to simulate the flying characteristics of any fighter aircraft. This would be cheaper than buying two-place versions of individual tactical aircraft, Lockheed contends.

Following are improvements incorporated in the T-33B:

- **Wing Leading Edge Slats**—For better stall and spin characteristics, a wing slat has been incorporated into

the wing leading edge. Each slat assembly is constructed so that the slat will operate as a unit. The leading edge sub-structure assembly supporting the slat assembly is attached to the front beam of the wing and is interchangeable with the present T-33 leading edge attachment. The slats are actuated by aerodynamic forces and are free floating.

Angle of movement is 17 degrees from fully closed to fully open. The slat is actuated when the angle of attack of the wing becomes approximately nine degrees. It reaches the fully open position of 17 degrees when the angle of attack of the wing reaches 19 degrees. The slat mechanism is said to require no special maintenance, such as rigging or realigning, and needs only periodic inspection and cleaning.

- **Empennage**—The empennage has been redesigned and relocated to further insure good stall and spin characteristics. Horizontal stabilizer and vertical fin have been raised 20 inches, and span of the stabilizer has been increased by 12 inches, adding approximately 4.3 square feet to the surface area. Dorsal fairings have been modified to accommodate the raised empennage, and the rudder has been extended approximately 20 inches below the horizontal stabilizer for an increase of about two square feet in rudder area. Total vertical stabilizer area has been boosted approximately 10 square feet.

- **Cockpit**—The windshield has been redesigned to provide the pilot with an unobstructed view at all times. It is made of one piece of formed laminated plexiglas instead of heavy plate glass. The canopy is made of one piece free-blown plexiglas several inches wider

and higher than the present canopy.

Cockpit sills have been moved outboard, making the cockpit wider, and the aft seat has been raised six inches to permit better vision from the aft, or instructor's cockpit. The canopy is raised and lowered electrically and emergency jettison is by a nitrogen-actuated cylinder. Jettison levers are installed at both forward and aft seats. Aft cockpit has anti-glare shield and a folding windscreen to protect it from windblast when the canopy is jettisoned. Cockpit pressurization is automatic. From sea level to 8,000 feet, the cockpit remains unpressurized. Between 8,000 and 15,300 feet, the cockpit altitude is maintained at 8,000 feet.

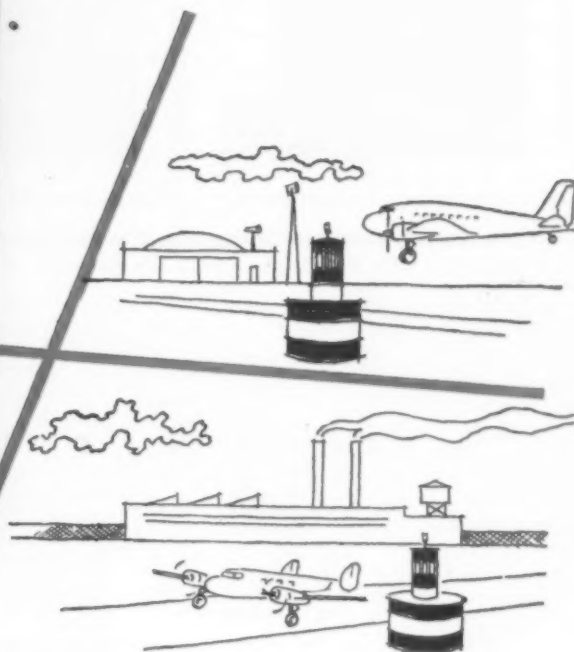
Above 15,300 feet, the system maintains a differential of 2.75 pounds per square inch. This means that at an altitude of 40,000 feet the cockpit altitude would be approximately 25,000 feet.

A safety valve prevents a pressure differential greater than three psi, prevents cabin pressure from becoming less than outside pressure, and may be operated manually to dump cabin pressure. A five psi system can be installed by a minor redesign of fuselage structure and the pressure safety valve. Hot air for defrosting is obtained from the engine compressor and an electric heater-blower unit provides a completely separated auxiliary system.

- **Instrumentation**—Cockpit shelves are wider, permitting better arrangement of instruments, and the instrument panels are new. Cockpit lighting has been changed to include edge-lit plastic panels on the console controls and individually lighted instruments on the instrument panels. Warning panels will indicate failure of eight systems: generator, turn and bank gyro, fuel device, instrument inverters, engine fuel

PROTOTYPE T-33B was favorably received in recent tour of 12 Air Force and Navy bases.





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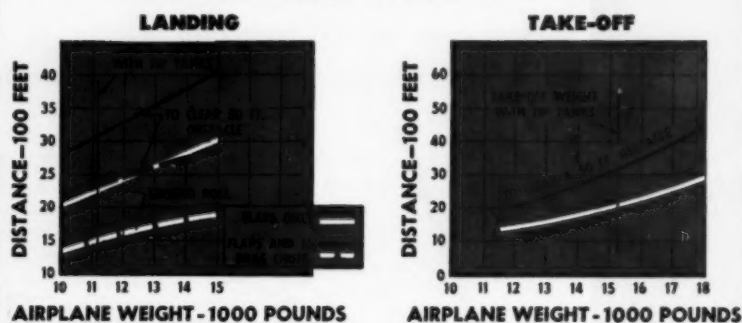
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LANDING AND TAKE-OFF PERFORMANCE OF T-33B



IMPROVED AIRPORT characteristics T-33B are shown in chart above.

pump, canopy lock system, low level fuel indicators, and fire detector.

The T-33B has the D-1 oxygen regulator system in which the warning lights become bright if breathing or oxygen flow is other than normal. Tip tank release system has been modified to add an automatic drop feature which will release the remaining tip tank if one tank inadvertently drops off. Navigation equipment is set up for complete dual control of ARC-27, ARN-14, and A-2 flight computer, and provision has been made for installation of ARA-25 UHF automatic direction finding equipment.

Radio master controls are located on the forward righthand shelf in each cockpit and control can be transferred from one cockpit to another by throwing a switch on these panels. Indicator lights in both cockpits show which cockpit holds radio control and, when control is on one cockpit, all radio must be set from that cockpit. Controls for the fire control system are installed in the forward cockpit on the lefthand shelf and include the manual or radar range selector, the K-19 weapon selector, the reticle brightness control, gun-sight and camera, 5.00 HVAR rocket selector, bomb arming and selector, and the bomb program selector.

Rear cockpit has master switches for guns, rocket selector, bomb selector, and bomb arming.

• Electrical and Hydraulic Systems
—Fast reading tell-tale panels replace the student lockout box to indicate up and down elevator tab movement, extend and retract wing flap movement, extended dive flap position, and they have an elevator tab lockout button.

This trainer is designed for a single AN 31-50-2, 24-volt, 36-ampere-hour, metal-case battery. The following circuits have been added: warning panel control, cockpit pressure, windshield defrost, "safe flight" pre-stall indicator, and oxygen warning. Circuits that have been improved include elevator tab,

fuel control, aileron tab, dive flap, and landing gear indicators. Only changes in hydraulic systems are the addition of a feel-spring cartridge in the aileron boost system to provide a more uniform stick force during engagement of the aileron, and shock mounting for the accumulator air pressure gage.

• Powerplant—The Allison J33-A-16A incorporates a number of improvements over the J33-A-35 engine in current trainers, including (1) a redesigned control system; (2) lengthened

truss rings providing increased compressor inlet area and additional thrust; (3) 950 pounds more thrust without water-alcohol injection than the dash 35 with water-alcohol; (4) a redesigned exhaust tail cone that eliminates the need for an adapter section between the tail cone and the tail pipe; (5) a completely engine mounted ignition system; (6) low voltage, high output ignition system; (7) overall maintenance improvement both in the installation and on the engine proper due to increased accessibility, fewer disconnects, and simplification of engine tear-down and build-up.

Other T-33B improvements include the addition of a steerable nose wheel, installation of a 16-foot Fist-type ribbon canopy drag chute, enlarged engine air scoops and ducts, and a modernized fuel system.

The new trainer represents a substantial improvement in directional stability, particularly at the small angles of side slip, and a higher effective lift coefficient is realized through the addition of the wing slats. The slats also improve landing characteristics by enabling the airplane to have an increased angle of attack before stalling. With tip tanks, maneuverability is as good as without tip tanks. Positive limit load factor for maneuvering is 7.33. This

Lockheed T-33B Specifications

BASIC DIMENSIONS

Span (No tip tanks)	37 ft. 6 in.
Span (230 gal. tip tanks)	42 ft. 9.94 in.
Length	38 ft. 6.62 in.
Height	13 ft. 4 in.
Landing gear trend	8 ft. 9 in.
Landing gear wheel base	14 ft. 2 in.
Tire size, main wheels ..	26 x 6.6
Tire size, nose wheel ...	22 x 7.25

AREAS

Wing (including projected fuselage area)	231.8 sq. ft.
Ailerons (Both)	17.5 sq. ft.
Wing flaps (Both)	30.7 sq. ft.
Horizontal stabilizer	39.12 sq. ft.
Dive flaps (Both)	5.8 sq. ft.
Elevators (Both)	8.7 sq. ft.
Vertical fin	42.94 sq. ft.
Rudder	7.2 sq. ft.

WEIGHTS

	Without Tip Tanks	With Tip Tanks
Weight empty	9,256 lbs.	9,256 lbs.
Crew (2)	460	460
Oxygen	35	35
Oxygen bottles	40	40
Engine oil	23	23
Engine fuel filter de-icing fluid	33	33
Residual fuel	72	72
Fuel, internal	1,951	1,951
Fuel, external	2,990	2,990
Tip tanks (2)	397	397
Gross Weight	11,870 lbs.	15,257 lbs.

ENGINE DATA

Manufacturer	Allison Division, General Motors Corp.
Model	440-D12; centrifugal flow compressor
Military designation	J33-A-16A
Sea level thrust ratings	
Military	6350 lbs. 11,800 rpm
Normal	5200 lbs. 11,200 rpm
94% Normal	4080 lbs. 10,528 rpm
89% Normal	3350 lbs. 9,968 rpm
Idle	476 lbs.(max) 3,750 rpm
Specific fuel consumption	1.10 lb. per hour per lb. thrust

FLIGHT PERFORMANCE

	Without Tip Tanks	With Tip Tanks
At Sea Level		
Maximum speed (knots)	514	504
Maximum rate of climb		
Combat weight (feet/min.) ..	6330	
Takeoff weight (feet/min.) ..	7700	5400
At 35,000 Feet		
Maximum speed (knots)	473	465
Maximum rate of climb		
Combat weight (feet/min.) ..	2850	
Takeoff weight (feet/min.) ..	3250	2150
Time to Climb 35,000 Feet		
Takeoff weight (minimum) ..	6.6	9.5
Combat Radius		
(Takeoff weight 15,257 pounds, fuel 4,941 pounds, tip tanks carried all the way)		412
Range		
(Takeoff weight 15,257 pounds, fuel 4,941 pounds, tip tanks carried all the way)		1154
		naut. miles

load factor can be utilized up to a gross weight of 18,000 pounds.

In seeking to interest the military services in the T-33B as a replacement trainer, Lockheed places particular emphasis on the plane's versatility and describes it as the safest jet airplane yet built. The T-33B, Lockheed says, can be used as a transition trainer, a navigation trainer, an instrument trainer, and a tactical trainer. As a universal trainer, Lockheed adds, it not only would duplicate the flying characteristics of various supersonic aircraft, but would readily lend itself to changes in the air training curriculum.

Artificial Stick Feel

Simulation of other aircraft is accomplished by having sensing elements and servo systems act on all of the control surfaces as well as the forward stick and rudder pedals. The system will change the zero position of the boosters without any movement of the forward stick or pedals. Artificial stick feel, by means of a servo, produces stick forces that would be experienced in the airplane being simulated. The pilot in the forward seat will be unaware of any simulator action except for the change in the trainer's behavior.

During some simulated maneuvers the readings of the air speed indicator, tachometer, and other flight instruments in the forward cockpit will be artificial in order to give a reading that will correspond to the instrument reading during the same maneuver in the airplane being simulated. This is accomplished by the sensing elements and transducers acting on the various instruments. The instructor in the rear cockpit can return the instruments and controls of the forward cockpit back to the trainer's own characteristics at any time during flight.

The universal trainer has separate instrument settings for each model being simulated. . . .

OBITUARY

Paul R. Braniff

Paul R. Braniff, 56, co-founder of Braniff Airways, died June 1 in an Oklahoma City hospital after being ill for some time.

Braniff joined with his brother, T. E. Braniff, to organize the airline in June, 1928. He had earlier founded Oklahoma's first commercial carrier, Paul R. Braniff, Inc., which he subsequently sold to Air National.

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Corporate Aircraft Sales Will Boom -- Lear

Prediction of the sale of 80,000 corporate-owned aircraft within the next 10 years was made by William P. Lear, board chairman of Lear, Inc. before the recent Aviation Writers Association meeting in Miami Beach. He also stated that as many as 400,000 aircraft, selling for under \$10,000, could be produced by 1964 if some of the "degenerate influences," i.e., absence of safe, reliable, and easy-to-read instruments, are removed. Such a low-cost aircraft would be the backbone of the commercial aircraft output, he feels.

Of boundary layer control, Lear stated: "Full utilization . . . is between two and five years away, but when it arrives aviation will truly come into its own."

LAV Orders Viscounts

The first Latin American order for the Vickers Viscount has come from Linea Aeropostal Venezolana. The Venezuelan carrier has ordered three of the turboprop aircraft for delivery in 1955. LAV currently operates an all-American aircraft fleet, but has three de Havilland Comet II's on order.

West Coast Talk

By Fred S. Hunter



Strong hints are being dropped around Burbank that Lockheed is now backing off from its long-range L-193 jet project—on which it has spent a million dollars—and is cooking up an entirely new replacement transport plane. The implication is that the new one is a turboprop. This, it might be added, is this week's back-fence report. Next week, the story going the rounds may be entirely different. But it's no secret that turboprop interest runs high at Lockheed. It will run higher if, as, and when somebody shows up with an efficient and modern commercial turboprop engine.

It caused no great surprise in this neck of the woods when Capital Airlines placed an order for the Viscount. "Slim" Carmichael, Capital president, has been after all the west coast aircraft manufacturers about a turboprop design that would fit the routes his airline flies. A real good fit would be a 50-60 passenger, four-engine job that would cruise at 400 mph and cost about the same as a Convair 340 to operate. All of the transport manufacturers undoubtedly would be most happy to try a design for size if someone would just fix 'em up with the powerplant. The Viscount, being in the 300 mph rather than 400 mph class, falls short of the Carmichael formula on speed, but at least it's a turboprop that's available.

North American Aviation is setting up plans to discontinue airframe manufacture at Downey and devote this facility entirely to its missile and control equipment division. This would also include the atomic energy section, although technically the latter is not an integral part of MACE, as the division is termed for short. North American now makes the T-28B at Downey. But the aircraft manufacturer's electro-mechanical, aerophysics, and related activities keep expanding so fast they need more room. Plan is to build a new factory for the T-28B at the Los Angeles International Airport.

How do you like this? The movies are going to immortalize Bill Lear by making a movie of his life. Producer Carl Krueger, who recently produced "Sabre Jet" with notable collaboration of the military, made the discovery that Bill's career ought to make a rags-to-riches saga with good box office appeal. The picture will be called "The Honor and the Glory" and a large share of it will be filmed at Wright-Patterson Air Force Base.

Speaking of movies reminds that "Jet Pilot," the Howard Hughes epic, still is unreleased. Hughes better hurry up or he'll have an out-dated picture. On the other hand, he more than likely figures the dames will still be in style even if the airplanes aren't.


And speaking of dames, Convair workers refer to the revised F-102 as the "Marilyn Monroe" model. You can make your own guesses as to what the changes are; they're classified, you know.

Douglas is discontinuing the triple air intake system for the DC-7. The alternate scoop is being removed because installation on the airplane didn't work out according to the wind tunnel tests. There is some consolation, however, in that the change saves approximately 120 pounds.

Burbank employees of Lockheed always come back envious from visits to Marietta. The assembly line at Marietta is $\frac{2}{5}$ ths of a mile long and they ride alongside in company cars or jeeps. At Burbank, they hoof it.

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PRE-DETERMINED INLAND TARGET

Sub-Launched Missile Gives Navy New Striking Power

CONTROL OF REGULUS HELD "UNCANNY"... "BIRDS" CAN BE RETRIEVED DURING TESTS

THE STORY BEHIND THE STORY:

■ When a guided missile launched from a submarine hundreds of miles off shore can be held to an accurate course at speeds approaching Mach 1, and precisely aimed at a specific inland target—that's news, *bad* news for a possible enemy. And, when costly models of the missile can be recovered and re-used time after time for evaluation and training, that's news, too—*good* news for American taxpayers.

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■ Providing the stability that holds Regulus on its course with a vise-like grip—and assuring recovery during tests—is a specially-designed Automatic Pilot, created by Sperry. Like its relative, the famous Sperry Gyropilot® Flight Control favored by the military and leading airlines, this electronic "brain" is sensitive to the slightest signal change in the flight path. Under its command, powerful servos or "muscles" of the control system

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United's DC-7 Press Flight a Classic

By WAYNE W. PARRISH

UNITED AIR LINES has not gone in for press flights as much as some other airlines but when it does stage one, it goes all out.

Faced with recouping a full six-months' lead by American Airlines in competitive DC-7 operations, United had to think up something brand new in the way of stunts to introduce its own DC-7's. Last January it decided on a dawn-to-dusk flight from New York to Honolulu. That meant 5000 miles chasing the sun a goodly portion of the way around the globe. (A fifth of the usual commercial routing, in fact.) If it succeeded, it was a wow. If it missed—that would be too tough to even think about.

This writer has been on plenty of press flights in the past 19 years, but the United affair which began in New York May 24 and ended back on the mainland on May 29 was the best and most carefully planned such flight that can be recalled. That's giving United a lot of credit because there have been some superb press trips, such as TWA's overseas one a few years ago.

Why a press flight? For publicity, of course. If you can get the right people on board, and nothing goes amiss, you're set. Anything can go wrong, and sometimes does. But in United's case the Honolulu flight reaped a harvest of fine publicity. The key was long-range planning and a top-flight load of influential and important press-radio-TV "names."

It was rumored that United had allocated \$20,000 for the flight, exclusive of plane and crew time which was already tied up anyway in breaking in the first DC-7's. Considering the deluxe aspects of the trip, \$20,000 probably didn't cover the costs. But whatever it cost, the resulting publicity was well worth it.

This was like no other press flight. Five months of planning was capped by the active participation of from 50 to 60 company personnel in all departments for the final two months prior to May 24. It was like a "D Day" operation. Particularly active were Robert E. Johnson, v.p.-sales, and Richard Rummel, director of publicity. But every department played a part.

United grabbed off such top guests as John Daly (TV), Frank Parker (Arthur Godfrey Show), Kenneth Banghart (NBC), columnists Bob Considine, Laura Hobson, Inez Robb, Earl Wilson, and Leonard Lyons, Jim Michener (South Pacific, etc.), Wes Price (Saturday Evening Post), Mal-

colm Muir, Jr., (Newsweek), and others of top press caliber.

Quite apart from the celebrity angle, however, United set some aviation history. Flying time from New York to Honolulu was 15 hours and 57 minutes, which isn't bad for 5000 miles. Average speed was 311 mph to San Francisco and 315 from there to Honolulu. For a dawn-to-dusk flight it could scarcely be beat except when jets come into use some day. Actual time N.Y.-SF was 8:17 hours and SF-HON, 7:40 hours. Total elapsed time was 16:51 hours. The flight got no weather breaks but, on the other hand, it went off without incident.

In Honolulu, guests were put up in style at the deluxe Royal Hawaiian Hotel on Waikiki Beach. Then they went to the very fine Hana Hotel on the Island of Maui, certainly one of the world's superior resort hotels. A night was also spent at Kona Inn, on the Island of Hawaii, which, it is sad to relate, is not up to its old standards in either food or service or atmosphere.

heads up United's DC-7 coordination committee, and Capt. M. H. Fay. Vale Dean was flight engineer and popular Harry Park was steward. There were also two stewardesses, Roberta Randolph and Evelyn Palmer.

Overseas the captains were I. E. Sommermeyer, general manager of flight operations, and W. E. "Slim" Larned, manager of flight operations—Los Angeles. Flight engineer was W. A. "Buzz" Bentson, and navigator was A. B. Stribley. Cabin service was handled by Joan Denton, Barbara Stewart, and Clem Keliikipi. Also on board, since no special flight would be any good without him, was Bill Williams, who retired from scheduled flying last year at the age of 60 and is now manager of flight operations—San Francisco. W. A. Patterson, United president, was on board from San Francisco-Honolulu.

But even with the most careful planning, there probably has never been a press flight without a slip-up of some kind. This time it was unimportant, in fact it is doubtful that more than a handful on board knew about it. There was supposed to be a light lunch served



STAR OF THE SHOW was the DC-7, being introduced into United's service. Two planes used followed the sun, made the New York-Honolulu run in 15 hours and 57 minutes. Guests included John Daly and Bob Considine.

(The steaks some of us got for dinner wouldn't get by on Eleventh Avenue in New York, but that was no fault of United's.) There were printed hotel directories at each stop, souvenirs such as sport shirts, flowers, liquor, fresh fruit, ground transport for the mere asking, and lots of other things which reflected detailed advance planning. There was plenty to do but no feeling of being rushed or regimented, and to press flight veterans this compliment to United will be understood.

Naturally the two crews, domestic and overseas, were old-timers who didn't let modesty stand in their way in bidding for the trip. (Two DC-7's were used, the transfer being made at San Francisco.) Out of New York there were Captain N. F. Timper, who

before reaching San Francisco to fill in that time-zone gap, but somebody (and it is likely he won't soon forget it) forgot to put it on at Idlewild. So there ensued the most prolonged cocktail party ever held waiting for the lunch, which eventually was served about 5 p.m. New York daylight time. But nobody much cared.

It could scarcely be recommended that Central Airlines or Bonanza attempt such a deluxe press trip to inaugurate a new service to Weak River Junction or Calipso, but for a major trunk carrier, where press flights often don't quite come off—or pay off—the United operation in May was a classic to serve as a model for types of promotions which click and pay dividends.

• • •

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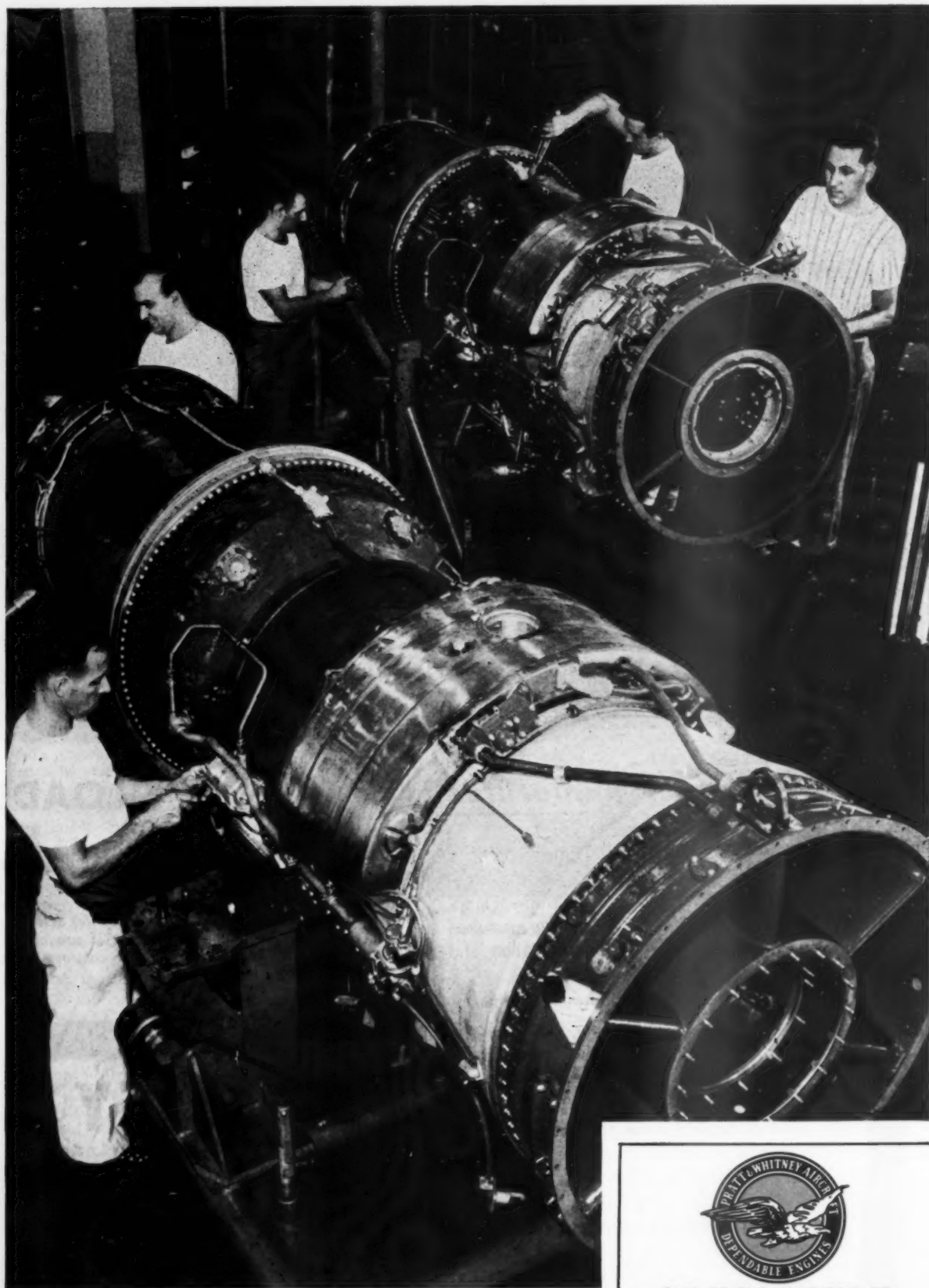
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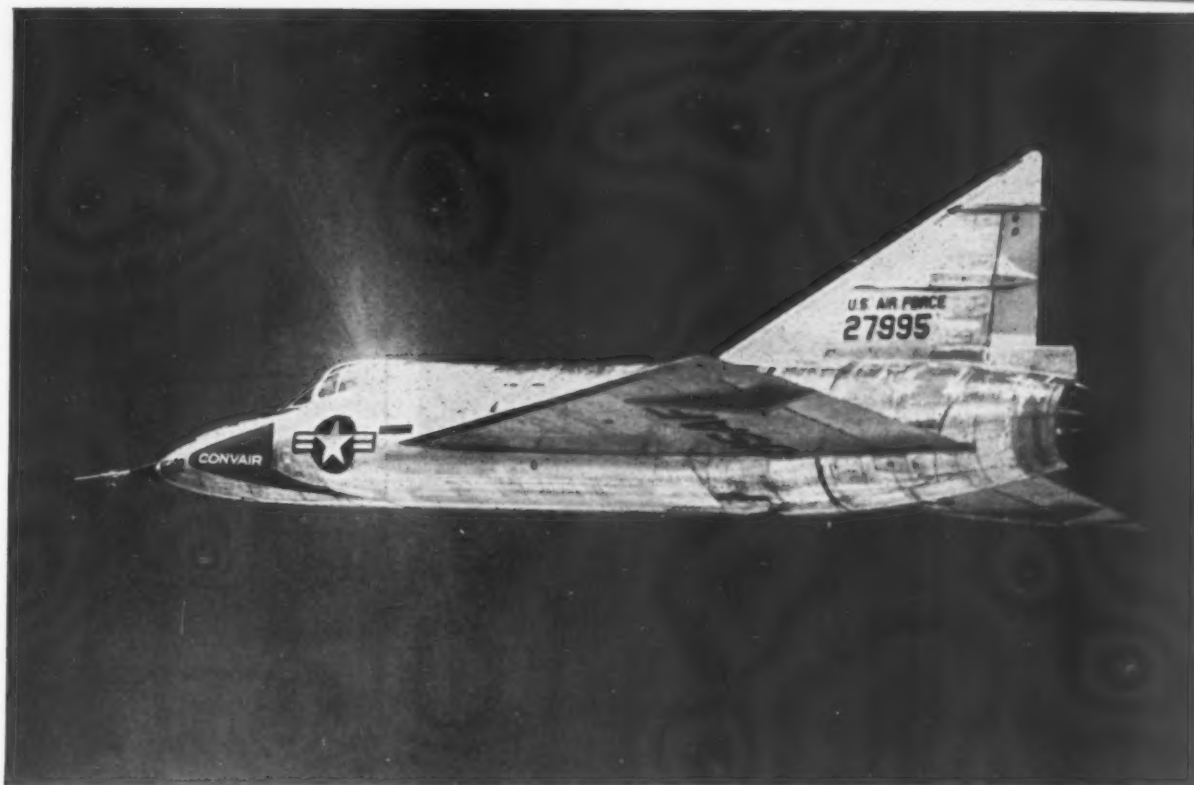
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Excellent rate of climb as well as phenomenal

speed in level flight are two of many significant F-102 characteristics which foretell its important future role in this nation's air defense. Here the huge thrust, fast acceleration and economy of the big J-57 make vital contributions to the aircraft's total capability as a weapons system.

In the F-102, as in other Air Force and Navy supersonic fighters and all-jet bombers, performance of Pratt & Whitney Aircraft's J-57 is fully justifying the years of intensive effort required for its design, development and production.

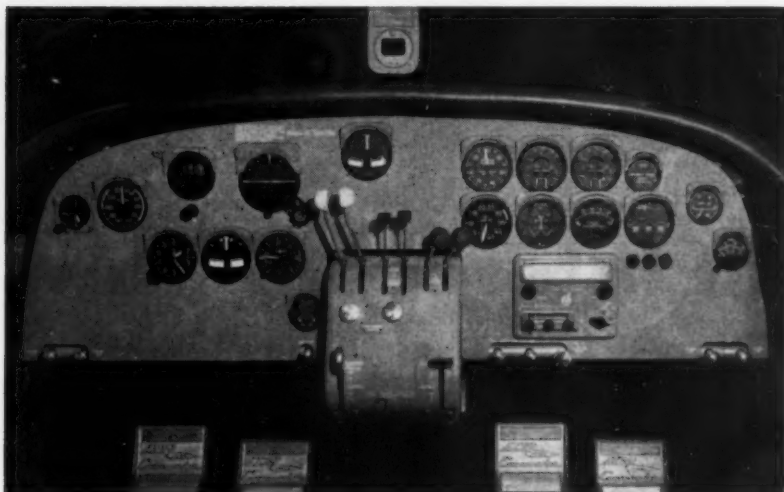
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DELIVERIES START THIS MONTH on the new swept-tail version of the Aero Commander, Model 560. Faster and heavier than original Model 520, new model sells for \$69,500 faf, has a top speed of 209 mph.



NEW FEATURES include redesigned instrument panel with instruments grouped for easy reference. Space is provided for installation of extra custom equipment. Instrument panel is provided with eye-brow lighting as aid to night flying.

ENGINE COWLING, covering two 270-hp Lycoming GO-480-B engines, can be removed in five minutes, speeding maintenance. Rear seat arm rest, when up, allows seating for three; when down, for two. Seating can be arranged for seven.



POWER STEERING UNIT (Above) allows for shorter turns, while low dual landing lights provide close-to-ground, glare-free illumination.



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Avco's Lycoming-Spencer Division, manufacturer of aircraft, automotive and tank engines, uses one hundred and ten Remington Rand 10 key Adding Machines in their Cost Accounting, Estimating and other departments.

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A good machine loading system should accomplish these objectives: (1) Indicate available machine capacities for handling any new work. (2) Point up bottlenecks and lags. (3) Assure proper sequence of job handling to meet schedules. (4) Control work flow, to process each unit in the shortest possible time, thus keeping work-in-process inventory at a minimum. (5) Control production by measuring performance against an established plan, resulting in better customer service and lower costs.

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NEW FLEET of Allied fuel trucks already in operation at New York's Idlewild Airport is custom-built for easy maintenance. Will eventually represent \$800,000 investment.

Firm Takes Over Servicing Headaches

Allied Maintenance Corp., biggest avgas handler, buys hardly a drop; performs all terminal services

STEP BY STEP the age-old problem among the airlines of high-cost duplication of services and servicing equipment at airport terminals is moving toward a solution.

Today at New York's Idlewild Airport, instead of the large staffs of people and maze of fueling equipment needed to support individual fueling crews of 26 foreign and domestic airlines, a single agency pumps every gallon of gasoline into every airplane serviced there.

This same agent loads and unloads cargo and supplies and operates all of the ramp equipment for five airlines. Seven more have engaged it to clean their airplanes inside and out, while another seven have put their entire baggage handling operation in its care. It also cleans office areas at Idlewild for 10 carriers. Three large airlines have assigned it the task of maintaining their aircraft hangar buildings.

In varying degrees it is the same story at Fort Worth's new Amon Carter Field, Greater Pittsburgh Airport, New York's La Guardia Field, Washington National Airport, Newark Airport, and Boston's Logan International Airport.

Behind the scenes in all of these operations, almost to the point of being anonymous, is Allied Maintenance Corp., a company that has slowly but steadily built up a \$20,000,000 annual business over the past 65 years by offering any type of service—anywhere—at cost plus a fixed fee.

Although Allied now boasts some 23 domestic airlines and 13 foreign carriers as steady customers, aviation still represents only about 20% of an annual gross business which involves more than 400 separate clients and a wide diversity of services.

Yet, in the short time that Allied has been in aviation it has become the biggest single handler of aviation gasoline. While it buys hardly a drop, Allied stores, trucks, pumps, or services about 430,000,000 gallons of avgas annually.

From Airfield to Outfield

To say that its activities are diverse is a gross understatement. From its fifth-floor offices in New York's Empire



RAMP EQUIPMENT is designed by Allied for long life, uses standard auto tires.

State Building, its "team" management directs the maintenance of the Pennsylvania Railroad's huge N.Y. Penn Station, the cleaning and waterproofing of skyscrapers, and the planting and mowing of grass at Brooklyn's Ebbets Field baseball park.

Its employees change engines on Boeing 377 Stratocruisers at Gander Airport in Newfoundland, run tea parties at a fashionable New York department store, and operate an electronic scoreboard at Yankee Stadium.

But Allied's interest in aviation is not a strange development when one considers that it has been closely associated with the transport industry from the day the company got its start. It actually came into being in the late 1880's when Dan Fraad, its founder, began a lamplighting service for the Pennsylvania Railroad.

The PRR has been a customer ever since, and today Fraad's sons William and Dan, Jr. head up Allied Maintenance Corp. and its 24 subsidiary or affiliated companies.

Entered Aviation in 1946

The first entry of the company into aviation dates back to 1946 when it took part in the 18-month-long Air Transport Association study of airport terminal operations. A year later Allied took over its first contract with the airlines to operate the ramp services at La Guardia Field International Terminal.

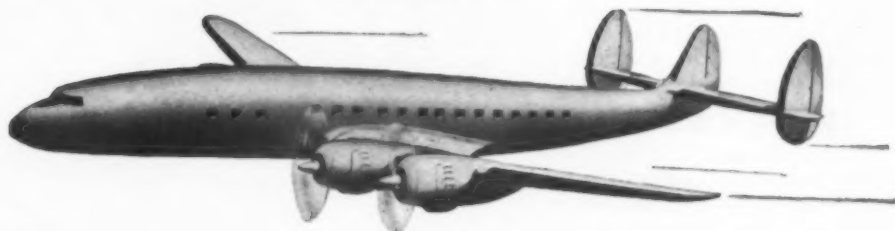
Its big success in this venture, and probably the best reason for its healthy growth in aviation since then, was borne out when refunds to the airlines by Allied through operating economies ran close to \$350,000 within a few years. This same trend continues today. In a much more recent example it was given a monthly budget of \$16,800 by an airline to maintain its hangar building. Within a few months, Allied found it could do the job and still make a profit for about \$12,000—using only three-fourths of the original funds allocated.

Probably the most varied job that Allied does in aviation today is at Gander Airport. Here its services range from actually selling airline tickets for six airlines at a joint ticket and information counter, to changing engines should an airline run into mechanical difficulty in the area. Allied passenger service agents meet every incoming flight, while other personnel operate a joint spare parts stock room for BOAC, PAA, and TWA.

If weather keeps the aircraft out of Gander, Allied staffs are on hand at Goose Bay, Labrador, Sydney, Nova Scotia, and Stephenville, Newfound-



**MORE
FLIGHT HOURS**



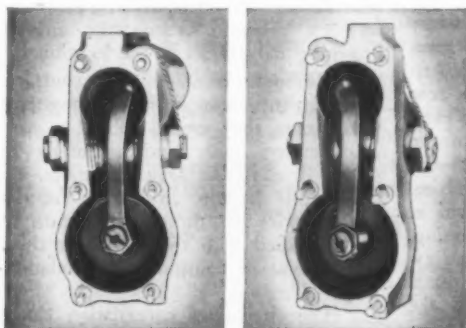
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TYPICAL ROCKER BOXES after 1100 Hours and 1500 Take-Offs using Koalmotor Aero Oil. Koalmotor has been proved to keep engines cleaner in controlled flight tests at all altitudes under all weather conditions.

HIGH HEAT	LOW CARBON	LESS ENGINE	LESS OIL
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For safer performance, less engine wear, fewer repairs, and lower oil consumption, ask your local airport to supply this new and superior grade of Cities Service Aviation Oil.

CITIES SERVICE AVIATION PRODUCTS



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land to handle the alternate operations.

To train for the aircraft maintenance job, its mechanics were sent to schools at Boeing Airplane Co. in Seattle and Pan American World Airways in New York. Most recently, technicians were schooled on the maintenance of Comet jet transports by British Overseas Airways Corp. in anticipation of their use in trans-Atlantic operations.

Fueling is Main Field

The main area in aviation where Allied feels it can really make a big contribution is in the improvement of fueling facilities. An example is the \$460,000 fuel farm and hydrant system that it installed and operates at the new Fort Worth International Airport. Since it took over the fueling contract at Idlewild Airport on November 20, 1953, the company has already bought and taken delivery on 20 new fueling trucks involving an investment of \$340,000. Ten more were ordered last month and, before the project is completed, another 20 will probably be needed, bringing the total equipment investment well over \$800,000.

As Dan Fraad, Jr. puts it, Allied is prepared to go anywhere the airlines or airport authorities want them, and to invest its own capital in the facilities.

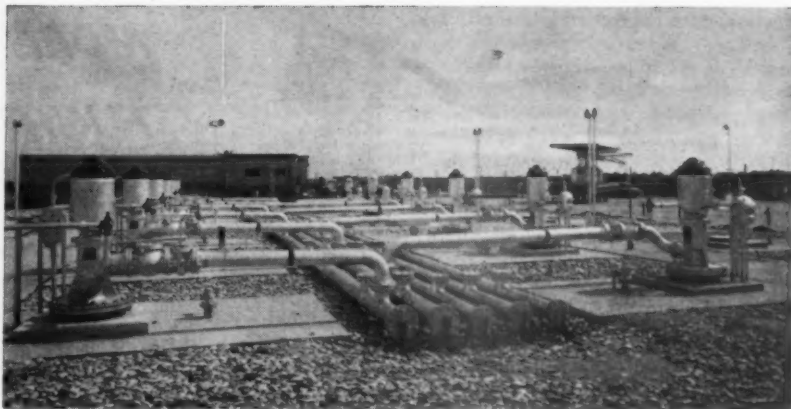
Having been in the business of selling its services for better than half a century, Allied has some well-founded ideas on just what kind of equipment it needs to do a job and how it should be designed. Aviation is no exception.

The secret here, according to Amos Buckley, who tackles all of Allied's technical problems whether they be at railroad terminals, ball parks, or airports, is to build the equipment with first consideration for low maintenance cost and second for endurance. Beyond that, design for good looks comes as an afterthought.

A good illustration is the design of the new \$17,000 fuel trucks at Idlewild. All the key operating components of the pumping system have been moved from their scattered locations beneath the trailer and cab to one central point immediately behind the cab. Thus they are immediately at hand for routine maintenance to forestall trouble, and for ready repair in the event trouble does develop.

Bigger Wheels—Smaller Cost

Allied's ramp baggage carts and water servicing carts are other good examples. Their main features are heavy construction to assure long life and the use of 6:00 x 16 wheels and tires common to low-priced automotive equipment instead of the smaller, frailer, and more expensive varieties usually found on airline ramp carts.



FUEL FARM at Fort Worth's new Amon Carter Field cost Allied \$460,000 and covers three-acre site. Present capacity is 300,000 gallons, but interconnecting plumbing installed above ground is readily adapted to further expansion should the need arise.

One of Allied's more recent developments is its Avigasser, a mobile fuel hydrant system (AMERICAN AVIATION, July 6, 1953) now in full-scale operation at Fort Worth International Airport. Buckley is justly proud of this development and points to a recent routine airline fueling operation when an airplane was serviced with a 3000-gallon fuel load in an elapsed time of only nine minutes from engine shutdown to completed fueling.

No Private Secretaries

The day-to-day business of finding the best way to do a job at the lowest possible cost starts in Allied's administrative offices. Private secretaries are non-existent in the company, and there is no such piece of paper as an inter-office correspondence form.

In their place is a unique teamwork among the men who make Allied tick, with each in his special field always keeping one or more of the other staff members up to date. No one has a major project or, for that matter, a big problem that he can call all his own.

It's strictly person-to-person when it comes to passing information from one staff man to the others. When Dan Fraad's phone rings and a new deal is on the fire—two, three, or even four of the staff are tuned in on the Allied end of the line. Along with the Fraads and Buckley are Arthur Thim, a specialist in the non-technical end of building maintenance, air conditioning, and painting. Don McCampbell, an ex-Trans World Airlines properties man, watches the operational end of the business.

Chief engineer at Allied is S. B. Many. Its comptroller, more often referred to as "The Scorekeeper," is Arthur Leatherman.

With its wide variety of services

goes an even wider variety of skilled and unskilled laborers, bringing the company into contact with about every kind of labor union imaginable. Whether they be carpenters, painters, or plumbers, or ticket-takers or ticket-sellers, Allied uses them all. With the hundred or more labor agreements on its books, it's not unusual for Frank Dooley, full-time labor relations man, to be negotiating two, three, or even four different contracts in the same day's work.

Where Allied may go light on secretarial help, the reverse is true in its accounting department. Its monthly billings itemize every cost, and its airline customers know just what they are paying for.

One of the interesting wrinkles in the way the company does business is that sometimes the airlines actually make a profit out of Allied's services instead of having to pay for them. When it contracts to do a job for a group of airlines, Allied also makes the same service available to others but, naturally, at a higher, non-contract rate. The profits from these outside jobs do not stay with Allied, however, but are prorated among the airlines engaging its services at the location.

Although most of its contracts with airlines are basically long-term agreements, they are all subject to cancellation on short notice, usually in 60 to 90 days. As Dan Fraad, Jr. explains this feature, "When you're doing a service job, the customer must be kept satisfied with the service or there is no point in continuing the relationship."

The short-term cancellation clause not only serves to keep Allied on its toes to keep its customers happy, Fraad says, but also encourages a client to use Allied by eliminating any apprehension he might have about being burdened with a long-term obligation. • • •



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Local Lines Confident They Can Prosper

But hope that Government's 're-appraisal' results in permanent certification and stronger routes

By WILLIAM V. HENZEY

WILL the local service airline industry be absorbed by the trunk-lines, become a new group of regional trunk-lines, or be aided in developing into a sound system of the truly local type envisioned by CAB back in 1946 when it started the current experiment?

Or will the local service industry and local service, as such, become extinct under a hasty Government economy program?

Those are the questions raised by the various "re-appraisals" of the young industry now under way. The uncertainty raised by them is but another unsettling factor to airline management, which has almost become accustomed to such other monumental problems as "When are we going to get a suitable airplane?" and "Will the CAB renew our present certificate?"

At the root of the new problem is the \$23,895,000 local service subsidy bill footed by the Government for fiscal 1954. Because that was \$2 million more than the previous year and \$6 million more than in 1951, the trend has been termed "unfavorable" and the industry subjected to "re-appraisals."

Talk is rife in aviation circles these days that the only "solution" for the Government is to have the larger trunk carriers absorb the local carriers and, accordingly, absorb the Government subsidies. Another "solution" is for a wide-spread program of mergers which would find about four to six local lines performing the service now offered by 14 carriers.

In answering the first possible "solution," CAB Member Josh Lee said in a recent speech: "I favor the reduction of subsidy too, but am unwilling to concede that the absorption of the local airlines by the trunklines would in the long run result in any beneficial economies to the Government. On the contrary, I fear that much we have achieved during the past 10 years in developing a broad base for the air transportation industry would be sacrificed."

Adams Cites Mid-West Case

Another CAB member, Joseph P. Adams, recently called attention to a specific evil that actually resulted from a local giving way to a trunk. It was the case of CAB's non-renewal of the local service certificate of Mid-West

Airlines and the awarding of most of the stops on that route to Braniff Airways. It contributed substantially, Adams said, to Braniff's request to go back on subsidy.

Most top airline people feel the only time such a development should take place on an industry basis is when the local carriers' cause is unequivocally deemed hopeless.

That such is not the case at present was shown recently by Donald W. Nyrop, counsel for the Conference of Local Airlines, when, in testifying before a Congressional committee, he presented figures showing a substantially greater contribution by the local industry in 1953 than by the entire trunk industry in 1938, considered a comparable year from a developmental standpoint.

"The most amazing figure of all," Nyrop testified, "is that showing that local airlines in 1953 carried 60% more passengers than all of the trunks operating in 1938."

Subsidy Trend Reversed

Another significant point was presented to Congress by CAB Rates Division Chief Irving Roth, who showed that the upward swing in local carriers' subsidy will be arrested during the coming fiscal year. Although the total subsidy bill for the small lines will be down only about \$50,000, it marks a reversal of the "unfavorable trend" and will be made in the face of expanded route mileage and service.

As for a wide-spread merger program, as advocated by the Air Coordinating Committee, there have been various mergers of local carriers in the past and three proceedings are now in

progress involving others.

In the pending cases, three carriers could lose their identity, thus reducing the total number of local lines to 11. In one, Lake Central Airlines could be absorbed by North Central, Allegheny, or Ozark, or on a dismemberment basis by any combination of the three.

A second involves CAB's investigation into a possible Southwest-Bonanza tie-up. The third is a voluntary proposal, well under way, in which Pioneer seeks to sell its assets to a trunk line—Continental.

Mergers among locals, however, result in larger carriers and raise the possibility, depending upon the degree, of locals becoming regional trunks. Particularly is this so when the program is coupled with added route grants by CAB and the elimination of restrictions which were originally designed to keep the small lines from competing with trunks on a direct basis.

Civic Support Urged

But there is strong feeling in high CAB circles that more freedom can be granted the local lines in the way of operating rights without permitting them to "metamorphos" into trunk lines. The local industry itself has an unshakeable confidence in its ability to develop a sound, eventually self-sufficient system, serving local areas.

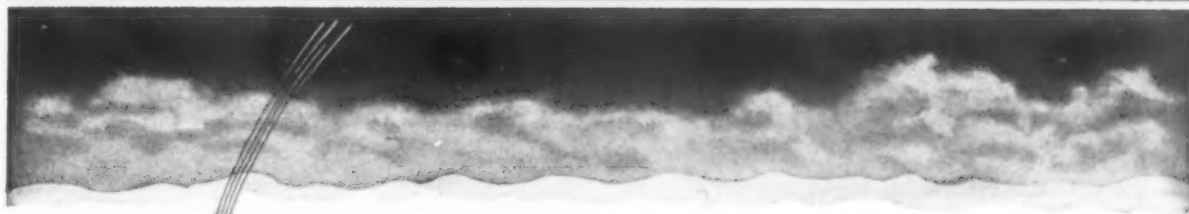
In this respect, many proposals have been advanced in recent months to combat the so-called "unfavorable trend." CAB Member Adams suggested that state and civic bodies get behind the local lines in their areas. By adding just one more passenger to each flight this could contribute \$3.5 million to reduce the total subsidy bill.

Member Oswald Ryan suggested a "more equitable distribution" of joint revenues between trunks and local lines to compensate the local carriers for the short-haul nature of their participation in joint traffic, bearing in mind that it costs as much to secure and board a short-haul passenger as it does a long-

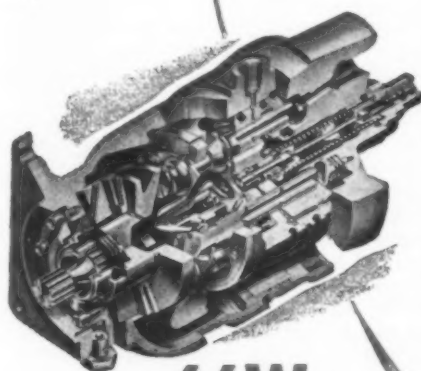
LOCAL SERVICE: FORK IN THE ROAD

Half the Industry Waits for Word on Where It's Going

Certificates will have expired by the year's end	1952 Bonanza—Expired Dec. 31, 1952 Renewal proceeding in progress	Certificates will expire during next four years	1955 Frontier—March 31, 1955 Renewal applied for
	1953 Ozark—Sept. 26, 1953 — Renewal proceeding in progress		North Central—Sept. 30, 1955
	1954 Trans-Texas—Mar. 31, 1954 Renewal applied for		1956 Central—Feb. 20, 1956 Allegheny—Dec. 31, 1956
	Southwest—Sept. 30, 1954 Renewal applied for, proceeding in progress		Southern—Dec. 31, 1956
	Pioneer—Sept. 30, 1954 West Coast—Sept. 30, 1954 Renewal applied for		1957 Piedmont—Dec. 31, 1957
	Lake Central—Dec. 31, 1954		1958 Mohawk—June 30, 1958



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STRATOPOWER Pumps draw fluid from unpressurized reservoirs to sustain system pressure at altitudes where other pumps, dependent upon pressurized reservoirs, would be unable to supply system demands. Thus, they afford that vital added safety factor for high altitude operation . . . system actuation is assured, even though reservoir pressure may be lost.

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Name

Address

City Zone State

haul passenger.

Board Vice-Chairman Harmar D. Denny urged relaxing of certain route restrictions in areas where it wouldn't interfere with trunks. CAB Executive Director Raymond Sawyer, in a New Hampshire speech, urged community support for the local lines.

Last December, in a Board letter signed by Chairman Chan Gurney, the presidents of the local carriers were urged to take "concerted action" in trimming costs as contrasted with "individual" carrier efforts.

Lee Advocates Economy

Member Josh Lee advocated that costs be attacked particularly in the fields of wages and salaries, and airport landing fees and terminal charges.

Nyrop's conference has succeeded in getting the local lines into the surface-mail-by-air experiment, thus cutting the subsidy bill. The conference also is delving into the various proposals suggested by CAB.

Individual airlines too are active. Allegheny President Leslie O. Barnes has proposed a new mail rate formula which would give management more freedom in scheduling flights, yet would result in lower mail pay requirements.

Mohawk has started a helicopter service on its routes; Southwest reports a better mail pay situation through its experiment with a "mixed-fleet" of DC-3's and Martin 2-0-2's. These are but a few.

Seven Lines Seek Renewals

Half of the fourteen local lines face certificate renewal proceedings this year (See table). In these, the carriers are hoping not only for renewals but for route-strengthening actions by the Board within the realm of the basic local service philosophy.

In the long pull, the carriers hope for permanent certification to bolster, among other things, financing possibilities. They also need an airplane and time. As Nyrop summed it up for Congress: "I am confident that the investment in local air service being made by Congress today will pay equally handsome dividends in the future."

CORRECTION

In the May 24 issue of AMERICAN AVIATION, page 30, Flight Safety, Inc. was erroneously referred to as Flight Service, Inc. in the article titled "Manuals Fitted to Business Flying." We regret the error and any inconvenience caused to Flight Safety, Inc. which is located at the Marine Terminal, LaGuardia Airport, Flushing, N. Y.

Extra Section

By Lois C. Philmus



A FINAL legal answer to who has the right to regulate the use of air space around airports and vicinities is now expected before the end of the year. Test court cases to decide the issue are pending in the New York area right now. The case Village of Cedarhurst, L. I. vs. 10 airlines, Port of New York Authority, CAA, CAB, and the Air Line Pilots Association may get to court on or about June 28. Cedarhurst, which lies off one of the main runways of New York International Airport, Idlewild, passed an ordinance last year which imposed a trespass fine on aircraft flying below 1000 feet. The aviation people obtained an injunction against the ordinance, pending an outcome of the forthcoming trial. Now it is learned that the Newark Mayors' Committee, member municipalities, and property owners will file a suit by mid-July. The towns—Newark, Elizabeth, Linden, Hillside, and Union—have appropriated \$25,000 to carry the lawsuit through. They don't expect to get any changes in the field's operation, but will seek a court order specifying altitudes or banning flights over communities.

The importance of these trials cannot be overestimated. All aviation authorities—airline, airport, and non-carrier—throughout the country's major terminal areas are awaiting the results. Prevalent feeling is that if the courts rule in favor of the municipalities, air transport will be irreparably damaged. Hence, if such a ruling is made the cases will be taken as high as the Supreme Court. If the rulings are in favor of the Federal control of air space, airports will be rid of a great "nuisance" factor.

One of the main impressions we carried away from the recent AAAE meeting in Louisville is a new mature attitude among a majority of the airport executives. The rather "desperate" attitude of having to show a profit from airport operations is diminishing. Taking its place is the sound, realistic approach that an airport is a service—a public utility, and should be able to pay for itself under ideal circumstances. But this will come in time, the "new look" managers told us. Now, they want to develop good service, sound accounting, and smooth running operations. Maybe the municipal officials are finally convinced of the importance of an airport (or close to it) and the manager can relax in his attempts to justify his existence and concentrate his full time on his airport.

One interesting request was made of the airport officials that might bear some action. It was brought to the attention of the group that the vast company-owned business aircraft fleet could use some ramp space. At airports where large fixed-base operations are located this is taken care of, but at a large number of airports it is not. The executive pilot is put in the position of having to take his passengers all the way and gone from the terminal building. The airlines have a monopoly on the ramp space and no arrangement has been made to the contrary. Cole Morrow, chairman of the board of the National Business Aircraft Assn., requested that the airports, if unable to afford to build special ramp space for the business flyers, at least make some arrangement with the airlines whereby the non-carriers could use the ramp space when not in airline service.

Frank Hiding, of Cedar Rapids Municipal Airport, is the best booster of TVOR we've come across yet. Collins Radio has a unit installed for test purposes at the airport and Hiding is completely sold. But he's not alone . . . The entire AAAE is, as a matter of fact. They passed a resolution petitioning and urging CAA to reinstate the TVOR program which they deem vital for smaller airports. They asked that the program be included in the new fiscal year budget.

Next AAAE annual meeting will take place in Tucson. Not by any accident either. Bob Schmidt and his wife carried on one of the most aggressive, impressive chamber of commerce campaigns we've seen. Complete with booths, literature, and costumes. They got everybody hooping it up for their city—even the Kentucky Colonels.

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You can look to Canadair as a permanent, reliable, fully authorized source for spare parts for C47/DC3 type aircraft.

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S-58 Data (Unofficial)

SPEED	130 knots or 150 mph
CARGO CAPACITY	Nearly two tons
TROOP CAPACITY	12 fully-equipped
PASSENGER CAPACITY	15 to 17
PRICE	\$235,000 to \$250,000
ENGINE	Wright R1820
CURRENT ORDERS	More than 100

Sikorsky S-58 Already on Quantity Order

By HARRY S. BAER, JR.

BRIDGEPORT, CONN.—This year is Sikorsky Aircraft Division's biggest when it comes to introducing new helicopter types. Division of United Aircraft Corp., Sikorsky has unveiled two so far and a third, the S-59 powered by a French Turbomeca Artouste II shaft-drive gas turbine, will be shown soon.

Most recent addition to Sikorsky production rotorcraft is the S-58, known by the Navy as the XHSS-1 and by the Army as the XH-34. It was shown for the first time publicly here on June 4. Rounding out this year's three newcomers is the twin-engine S-56 (AMERICAN AVIATION, Feb. 1), which is called the HR2S by the Marine Corps and H-37A by the Army.

Destined to become a major production item at Sikorsky, the S-58 already is on quantity order by both the Navy and the Army. The Army, it was learned, has asked for about 100. Overall Navy orders, it is understood, are not yet firm, pending continuing comparison of the S-58 (XHSS-1) and the Bell XHSL, both rotorcraft being designed for the same Navy mission as anti-submarine helicopters. The Marine Corps has also placed a limited order for the S-58's, it is understood.

Although somewhat similar in appearance to the widely used Sikorsky S-55 (Army H-19, Navy HO4S, Marine HRS), this is where the S-58 similarity ends, according to Igor I. Sikorsky, division engineering manager and helicopter pioneer. In an AMERICAN AVIATION interview, Sikorsky termed the S-58 as "the youngest

brother of the S-55," of which there have been more than 700 produced.

He called the new rotorcraft an "excellent, all-around general utility helicopter," adding that it has "substantially larger lifting capacity and improved performance" as compared to the medium-sized S-55. It is "at least as fast or faster" than the S-56, biggest Sikorsky rotorcraft, which has a speed said to be "well over 150 mph."

A single-engine, single-rotor vehicle, the S-58 is powered by a 1425 hp Wright R1820 reciprocating engine, produced by Bridgeport-Lycoming Division of AVCO Manufacturing Corp. at nearby Stratford. The engine is installed in the nose of the S-58 with clamshell doors which give the same ease of maintenance as on the S-55.

It was learned that the operating speed of the S-58 is about 130 knots or 150 mph.

Eight Litter Patients

Its price tag on early versions will be between \$235,000 and \$250,000, authorities said, compared to the present S-55 price of about \$137,500. Estimated cost of the large S-56, it was noted, is now running between \$750,000 and \$800,000, although this is eventually expected to be lowered to approximately \$500,000.

The S-58's carrying capacity is roughly two tons, or nearly twice that of the S-55. In addition to the pilot and co-pilot, it can haul 12 fully equipped combat troops or eight litter patients. For commercial use, it could accommodate 15 to 17 passengers.

In pointing out some principal features of the S-58, W. W. Lysak, project

engineer, mentioned its Sikorsky-manufactured autopilot and hovering stabilization device, one of the first such units tailor-made for production rotorcraft. He also noted its dual hydraulic servo system for main rotor control as a "significant mechanism."

Ninth Sikorsky helicopter design to reach the production stage, the S-58 is equipped with sonar gear as its basic anti-submarine equipment. This includes an electrical device that may be lowered into the ocean for detection purposes while the rotorcraft hovers at low altitude.

Having already made 75 test flights, the turbine-driven S-59 is a four-place rotorcraft based on the S-52 (Army H-18). Its powerplant generates some 400 hp. Sponsored by the Army through the Air Force, the S-59 project currently involves only one rotorcraft. It should be officially unveiled by Sikorsky within two months, it was indicated.

Aside from the S-59, S-58, S-56, and S-55—Sikorsky's four basic, current helicopter types—the company is also working on the S-57, an experimental convertiplane study sponsored by the Navy with the Army sharing some of the cost. Still in the design study stage, the project involves a single-blade, retractable rotor.

Igor Sikorsky, who is blunt about not being very inspired with this project, said he feels the convertiplane "may be practical, but it is not necessary."

"A convertiplane, when it is hovering, carries on its back an airplane," Sikorsky said, "and when it is in straight flight it carries a helicopter on its back."

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FOR TOMORROW'S AIR WORLD



RYAN is harnessing the tiniest particles of matter—electrons—to guide high speed missiles and aircraft. Through electronics research, Ryan Engineers are developing guidance systems components for missiles and airborne navigational devices for piloted planes. By these electronic means, guidance data is gathered at thousands of times the speed which the human brain can accomplish.

ACHIEVED under Air Force and Navy contracts, these components are telescoped into amazingly small packages to fit into advanced-type aerial vehicles. A typical airborne radar system is so small it can be carried in a handbag. These and other electronic items are outgrowths of Ryan's work in producing the first air-to-air missile—the "Firebird"—several years ago.

RYAN has a unique environment for this research. The same engineers who design electronic systems, man the planes and ground stations for testing them in actual flight and evaluate their test data in the laboratory. This results in complete continuity of development and thorough integration of each problem from laboratory to operational stage.

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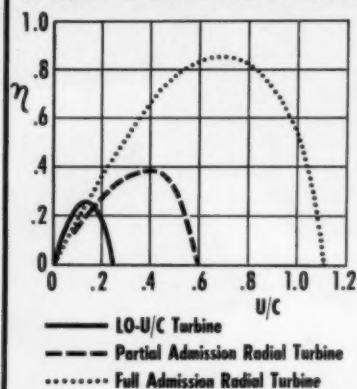
Pioneers in Each ★ Leaders in All

With its 31 years of experience in design and production of aircraft, plus pioneering work in such diverse fields as electronics and metallurgy, Ryan has the gamut of complex skills demanded by the new Weapons Systems Concept.

Because of this versatility, which made possible the development of the electronically controlled "Firebee" pilotless jet plane, Ryan is uniquely qualified to solve today's difficult technical aircraft problems. Already Ryan is at work under recently awarded Weapons System Management contracts which give the company full responsibility for all phases of new aircraft development.

New Products

TEST RESULTS ON VARIOUS TURBINE DESIGNS



EFFICIENCY CURVES (left) and fuel pump assembly.

Hydro-Aire Unveils New LO-U/C Turbine

Hydro-Aire, Inc. of Burbank, Calif., has unveiled its first entry into the aircraft turbine design and manufacturing field, announcing its new LO-U/C accessory drive turbine identified for its low ratio of speed to pressure head.

In combination with another recent Hydro-Aire development, the HY-V/L (high vapor-liquid ratio) fuel pump for aircraft and guided missile applications, the resulting turbine-driven fuel transfer pump package exceeds specified weight flow and head requirements at all stipulated flight conditions and altitudes.

When installed in a given accessory package, the new turbine wheel mounts on the main shaft of the accessory and the housing is readily adaptable to integration with the housing of the accessory. It operates at all times under full compressor bleed pressure, and has its own built-in aerodynamic speed limitations whereby its maximum overspeed condition will not exceed the mechanical limitations of the accessory package.

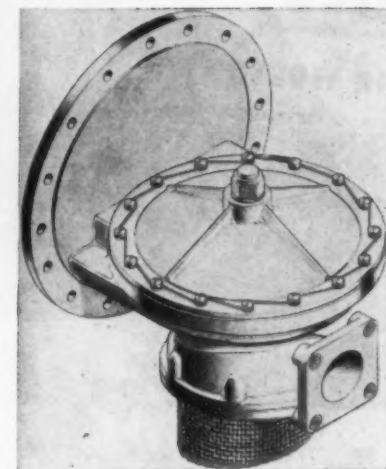
As a result, the LO-U/C turbine dispenses with the need for complex overspeed sensing devices, shut-off valves, and actuators.

First step taken by Hydro-Aire's new turbo-machinery development group in its design was to study current aircraft and missile accessory drive problems, then to set down a list of design objectives to overcome them.

Results of this study called for:

- A direct drive source of rotative power providing higher operating efficiencies in a given range than available from conventional single or multi-stage turbines. Complex controls should be eliminated.

- Design must represent space and



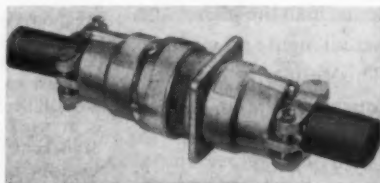
weight savings over conventional turbines, and must be flexible enough to be tailored to fit specific applications without incurring excessive production costs.

Outcome of this development was the LO-U/C turbine. According to Hydro-Aire, it provides thermodynamic performance at low blade speeds superior to that of conventional turbine designs.

For ease of production, the energy transfer principle used by Hydro-Aire in its turbine design permits the use of a simplified blade form to which extrusion techniques may readily be applied. This feature, along with the relatively few requirements for close tolerances throughout its fabrication, facilitates inexpensive quantity production.

Another design feature of the LO-U/C permits dry run operation at full runaway speed of 24,000 rpm for 30-minute intervals. The bearing arrangement provides for internally sealed lubrication allowing the bearings to operate without replacement or servicing throughout its rated lifetime of 1200 performance hours.

Address: Hydro-Aire, Inc., Dept. AAP, 3000 Winona Ave., Burbank, Calif.



Cannon Connectors. New multi-contact AN-"E" series connector designed to resist extreme environmental conditions

spelled out in Spec. MIL-C-5015A has been announced by the Cannon Electric Co.

Feature of the new unit is an insulator and grommet design whereby the circuits through the connector are completely sealed from cable to cable.

The Cannon "E" connector uses either of two insert materials, a new light polychloroprene material or a silicon compound. Shells are of one-piece construction with integral clamps, and the 90-degree angle plug has a removable AAP. Address: Cannon Electric Co., Dept. AAP, P. O. Box 75, Los Angeles 31, Calif.

Hi-Strength Bolts. New aircraft bolts with tensile strength ratings of 200,000 to 225,000 psi are being produced by Standard Pressed Steel Co. in 12 sizes ranging from 1/4" to 1 1/2" diameter.

Manufactured from 8740, 4340, and 4140 high-alloy steels, the new SPS bolts are cold forged for sizes up to 1 1/4", and hot-upset forged in larger sizes. New high tensile strength has been achieved through a process of thread rolling after the bolt is heat treated using special tooling and equipment installed by SPS at a cost of \$500,000. Address: Standard Pressed Steel Co., Dept. AAP, Jenkintown, Pa.



Servicing Ladder. An all-aluminum aircraft servicing ladder that is curved at the top to mate with wing leading edge surfaces and equipped with safety shoes to prevent slippage even when on ice is being produced in lengths to accommodate all aircraft. Truss-type side construction is rigid yet lightweight, and corrugated 1 1/4" rungs are attached to

rails by a special swaging process to prevent turning or loosening.

Address: R. D. Werner Co., Inc., Dept. AAP, 295 Fifth Ave., New York 16, N. Y.



Circuit Analyzer. A newly developed automatic electrical circuit analyzer tests aircraft cable and control panel installations at speeds up to 200 circuits in 20 seconds and requires no modification to adapt it to varying circuitry.

Unit is designed to test automatically for line and insulation resistance simultaneously up to 200 megohms with both a 28-volt and 500-volt d-c test range. For speed of operation, a test selector switch is rotated to the desired test voltage and the test proceeds automatically.

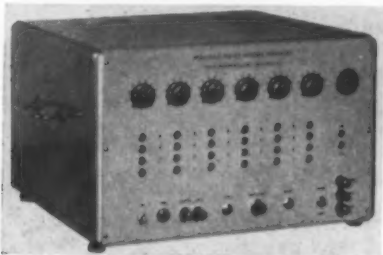
Address: DIT-MCO, Inc., Electronics Division, Dept. AAP, 505 West 9th St., Kansas City, Mo.

Air-Oil Regulator. A multi-purpose air-oil pressure regulator, used for pressurizing hydraulic reservoir installations, protects against excessive tank pressures by means of an integral relief valve. Unit also includes a vacuum venting valve to guard against tank collapse under changing atmospheric pressures, and a check valve prevents air or fluid from bleeding back into upstream lines during engine shut-down or pressure source failure.

New valve weighs 0.76 pounds and is currently used on Republic F-84F and RF-84 aircraft.

Address: United Aircraft Products, Inc., Dept. AAP, Box 1035, Dayton, Ohio.

In Electronics



Interval Generator. For testing and calibrating radar, sonar, or other systems relying on time measurements for

their operation, the new Potter Model 564 preset interval generator either originates or measures time intervals or delays ranging from one microsecond to one second. To measure a time interval, the unit counts the exact number of pulses produced by a one megacycle crystal-controlled oscillator during the interval. Indication is provided by means of neon lamps arranged to give six-digit readings in microseconds.

Address: Potter Instrument Co., Inc., Dept. AAP, 115 Cutter Mill Road, Great Neck, N. Y.

Resistors. Precision wire-wound resistors use a newly developed "Rho-Mized" process by which the resistance elements are first suspended in Dow Corning Silas-

tic (silicone rubber), and then encapsulated in a non-hygroscopic resin.

Design is said to produce a highly stable resistor protected against salt water, humidity, high and low temperature.

Address: Rho Engineering Co., Dept. AAP, 4205 Sepulveda Blvd., Culver City, Calif.

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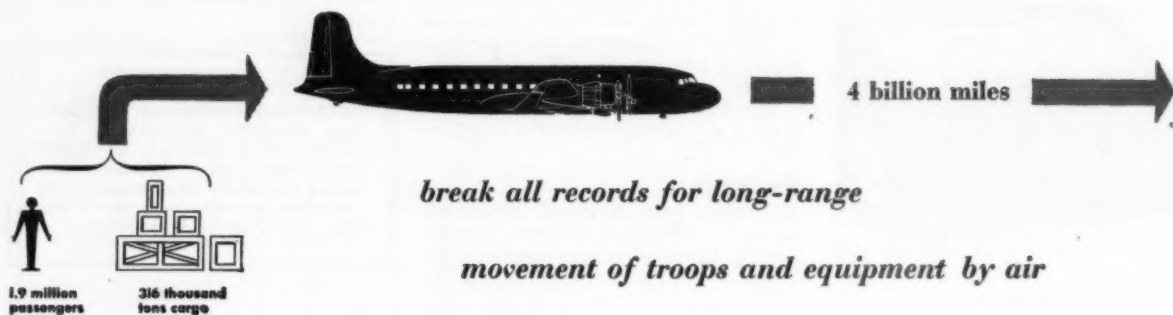
permitting accurate phase shift checks on omni-range receivers like the famous ARC 15D seen at left.

If your omni leads you astray, let SAC's ARC-approved radio lab check and correct it quickly and scientifically!

Registering approval in her newest TV-viewing rig is raven-haired, black-eyed Valere Duncan, 28, 5'4", 110 lbs.



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—the Douglas Liftmaster

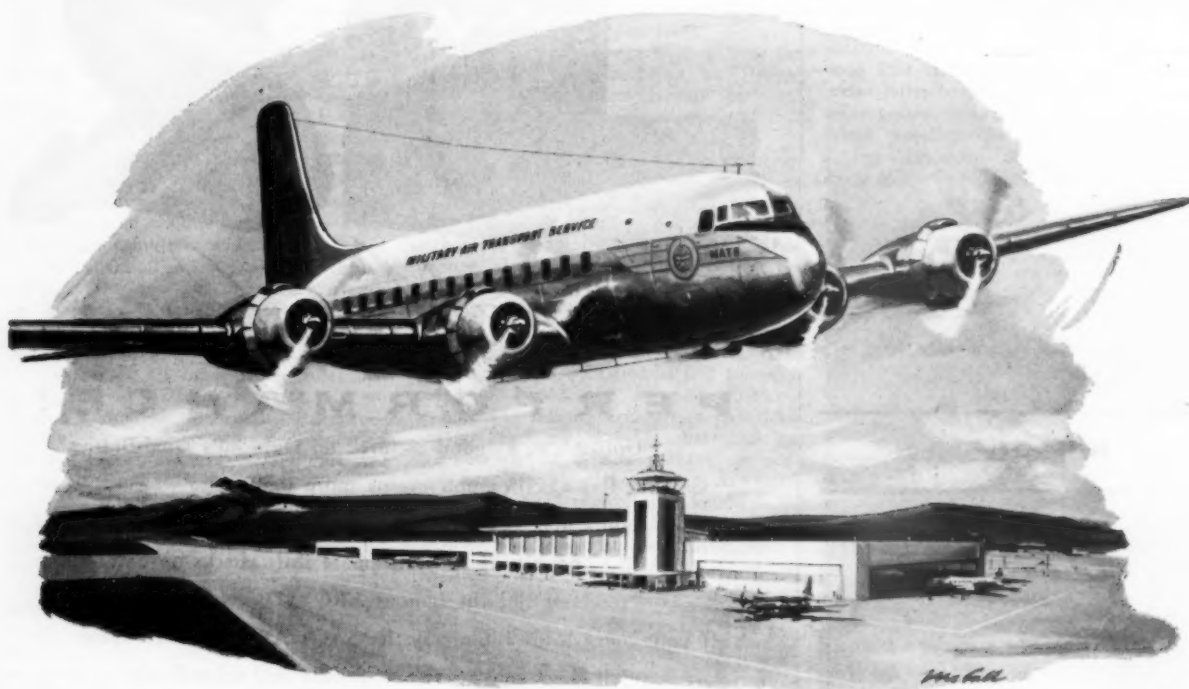
Move everybody in Kansas to Maine—with 632 million pounds of baggage—and you equal the record airlift made by MATS in just five years.

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Douglas DC-6A Liftmasters. At air fields, Liftmaster's cargo hold is quickly serviced through front and rear doors, while a self-powered elevator lifts two-ton loads from truck-bed height to cabin floor level. Liftmaster's range is 2850 miles *non-stop*, at better

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First in Aviation

Engine Modification Delays BOAC Britannias

Airline is eager to place turboprop in service; reduction gear failure believed cause of crash.

By ANTHONY VANDYK

BRISTOL, ENGLAND—With the first stretched-fuselage Britannia 300 in the assembly stage and 15 Britannia 100's either completed or well advanced in assembly, the Bristol Aeroplane Company is giving top priority to modification work on the Proteus turboprop. Until this work has been completed the date when the Britannia enters passenger-carrying service with British Overseas Airways Corp. must remain a question mark.

BOAC is eagerly awaiting the Britannia to alleviate its acute shortage of equipment and has already formulated a comprehensive and detailed operational testing and integration program. The corporation last year established a nucleus Britannia unit headed by Captain Houston as Britannia fleet manager. This unit's planning is going ahead despite uncertainty regarding certification of the big turboprop transport.

The certification problem is connected with the Proteus engine, a unit which has had a lengthy development period as was to be expected with the world's first large turboprop (the production Proteus 755 develops 4150 equivalent horsepower). With big engines of this type the transmission of power from the turbine to the propeller is not easy.

It was, in fact, failure of the reduction gear that caused the crash of the second Britannia prototype last February. There has been no official announcement on the circumstances of the accident but the following account is believed to be essentially correct.

The aircraft was being demonstrated by Bristol's chief test pilot, A. J. Pegg, to two representatives of KLM Royal Dutch Airlines. One of the Dutchmen was in the co-pilot's seat when the trouble occurred. The engine (it was the only non-standard one in the aircraft; the other three were standard units) was feathered and some minutes were allowed for dissipation of temperature (indications were actually those of oil cooling).

Lands In River

Pegg unfeathered and re-lit the engine. The gear stripped and with the sudden drop in resistance the power turbine oversped causing the shaft to shear. The turbine disk came off and indications are that it went sideways

and slightly upwards. Fire occurred in the oil tank bay, an area in which the fire extinguishers do not operate.

The aircraft was landed virtually undamaged on the mudflats of the River Severn but was flooded by the rising tide before it could be salvaged.

Fuel Cut-Off

Bristol has been working day and night to devise means of preventing a repetition of this accident. Actually, runaway of the compressor turbine had been foreseen and a safety device had been incorporated, but the power turbine was thought to have been secured by propeller drag. Bristol has now incorporated in the Proteus a fuel cut off switch operated by a fall in torque pressure. This is simple enough but it is the devising of means to prevent it operating at the wrong time that is difficult.

Bristol is also replacing the plain gears of the Proteus 705 with the double-helical gears designed for the 750 series (these had been designed some time ago). Engines have been run at almost 50% overspeed on the bench to prove the gears (16,000 rpm instead of 10,500 rpm). Furthermore, fire extinguishers have been fitted in the oil tank bays.

These modifications will help toward getting the Britannia certificated for passenger-carrying work. The Air Registration Board, Britain's certification authority, is understood to be particularly concerned about the prevention of overspeeding and the turbine disk coming off. It is probable that armor plating will have to be fitted to guard against damage should the latter happen.

Test Flights Resumed

Meanwhile the first Britannia prototype has resumed its flight test program after being grounded for four months. The first production Britannia 100 is almost ready for flight testing. This aircraft will have Proteus 705 engines with compressor-tapped air for the pressurization system. All 15 Britannia 100 production planes will have this system instead of the originally projected arrangement with engine-driven blowers.

The Britannia production program now involves supplying 10 Britannia 300's and seven long range 300's to BOAC in addition to the 15 100's. The

long-range 300 has about 22% more fuel capacity than the ordinary 300, which should enable it to carry a payload of 21,000 lbs. non-stop from London to New York at all seasons and against all headwinds. It will gross 165,000 lbs. and have a still-air range of 4500 miles with a 30,000-lb. payload.

It is the very fine range and payload performance of the Britannia that is making BOAC increasingly enthusiastic about the aircraft. The airline's planners do not represent the plane be particularly fast but they believe that it will compare very well with any piston-engine transport.

"Flogging" Planned

BOAC hopes to get three production Britannias this year or early in 1956 for "flogging"—intensive operational development flying. These aircraft would not, of course, be certificated for passenger-carrying and would be used to accumulate hours under simulated operational conditions. Initially they would be flown chiefly between London and East Africa and West Africa. BOAC insists on getting many thousands of hours "flogging" before considering passenger-carrying operations.

The three aircraft would remain in use for training and "flogging" until most of the 12 other Britannia 100's had been delivered. They would then go back to Bristol to be brought up to service standard.

25 Planes A Year

The modifications required as a result of the "flogging" process would be incorporated in the 12 100's before delivery to BOAC. It is premature to report dates of delivery, but as far as the airframe production program at Bristol is concerned, all 15 100's will be completed by the end of 1955. The target production rate is 25 planes a year at Bristol with the Belfast plant of Short Bros. and Harland standing by to make available additional capacity from 1956 onward if required. The only production order for the Britannia so far has come from BOAC (for 33 with an option on two more). • • •

New Service Handbook

A service bulletin and handbook covering the conversion of Greer Model MG-2 Hi-Lo Magneto Test Machines from a mechanical to electronic drive system has been prepared by Greer, Inc., Brooklyn, N.Y. Modification permits adjustable speed operation through an infinitely variable range.

*Reliability
Assured*

WITH NEW DIAPHLEX S E A L E D P R E S S U R E S W I T C H



By employing advanced designs and modern manufacturing processes, Diaphlex has again improved the art of Pressure Switch manufacture. The new Sealed Pressure Switch is an all welded, stainless steel, panel mounted unit. The complete assembly is leak proof, hermetically sealed and mass spectrometer tested to a calibrated leak rate of .25 microns cubic feet per hour, thus making the complete switch assembly immune to humidity. The pressure settings range from 1.5 to 1400 P.S.I. with a surge pressure rating of 3000 P.S.I.

The Sealed Pressure Switch has been qualified to MIL-F-8615 (ASG), MIL-F-8616 (ASG), MIL-R-5151, MIL-E-5272A, and MCREXP 524-1854 by Inland Testing Laboratories. It is explosion resistant, weighs only 6 ounces and measures $2\frac{1}{16}'' \times 1\frac{1}{16}''$ displacing $8\frac{1}{2}$ cubic inches. The electrical rating, $\frac{1}{4}$ Amp. inductive, $\frac{1}{2}$ Amp. resistive, 28 volts D.C., can be greatly increased by incorporating a relay and enlarging the cover. The new Sealed Pressure Switch has been thoroughly flight tested in Aircraft, Missiles, and RATO Rocket Assists. Experience therefore has proven its reliability, versatility and stability.

Optional use of Relay for heavy current switching increases height of cover $1\frac{1}{2}$ inches and weight only 5 ounces



Hermetically Sealed Pressure Switch showing welded cover and pinch tube for evacuating the switch chamber



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People

MANUFACTURING

Bennett Archambault has been elected president and a director of Stewart-Warner Corp. succeeding **James S. Knowlson**, who will continue as chairman of the board. Archambault was vice president and general manager of the M. W. Kellogg Co.

Walter G. Bain of Republic Aviation Corp. has been named vice president and general manager from his previous position as vice president and executive assistant.

Edward T. Bolton has been appointed executive vice president, general manager, and member of the board of directors of Hiller Helicopters. Bolton was previously vice president of Philippine Air Lines.



Bolton



Miller

Leland W. Miller has been appointed financial vice president of Engineering & Research Corp. Miller, one time chief of the Air Force budget and fiscal office, was more recently vice president in charge of finance for Consolidated Vultee Aircraft Corp.

Robert R. Miller of Northrop Aircraft, Inc. has been shifted from the staff of **John W. Myers**, Northrop senior vice president, to assistant to **Whitley C. Collins**, Northrop's newly elected president.

Joseph F. Chalupa has been appointed assistant works manager of the Aviation Gas Turbine Division of Westinghouse Electric Corp. In his new post, Chalupa will be in charge of all plant operations at the division's South Philadelphia plant.

Norman Caplan has been named to replace **Douglas M. Heller** as manager of commercial engineering at the Bendix Radio Communications Division of Bendix Aviation Corp. **J. H. Taylor** succeeds Caplan as communications and navigation engineering chief engineer.

AIRLINES

Emery M. Ellingson, formerly west coast regional manager and director of operations for the Air Transport Association, has joined AiResearch Manufacturing Co. as sales coordinator for airline customers. Another former airline man, **Richard H. Schwank**, has also gone to AiResearch in its customer service department. Schwank was pre-

viously assistant director of procurement for Delta-C&S Air Lines.

William L. Keating has moved up from director of operations, Pacific division, to vice president of operations for Transocean Air Lines.

F. E. Howe, vice president and treasurer of Central Airlines, has been named the line's executive vice president. Central's former operations manager, **John L. Blackwell**, was made vice president of operations, and **D. S. Vaughan**, formerly superintendent of maintenance for West Coast Airlines, has been appointed Central's director of maintenance.

Charles A. Bucks has been named regional sales manager for Texas and New Mexico for Pioneer Air Lines from his former position as district sales manager for the Dallas area.

William E. Ryan, until recently district sales manager for United Air Lines in Providence, is now assistant to UAL's eastern regional sales manager, **M. P. Bickley**.



- **George S. Nash**, Pan American Airways. Inspection, Miami. 25 years.
- **P. M. Giesen**, American Airlines. Stores supervisor, Los Angeles. 25 years.
- **J. O. Connor**, American Airlines. Operations manager, Memphis. 25 years.
- **B. J. Hugger**, American Airlines. Operations manager, Cincinnati. 25 years.
- **W. H. Ross**, American Airlines. Aircraft maintenance general foreman, Fort Worth. 25 years.
- **W. N. Bump**, American Airlines. Regional sales vice president, Boston. 25 years.

1953 Airline Salaries

Following are 1953 airline salaries as reported to CAB:

BONANZA AIR LINES, INC.

Edmund C. Converse, pres. and dir., no salary; **Florence J. Murphy**, secy., treas. and dir., \$8,125 salary (up \$500); **Wesley J. Durston**, v.p. and dir., no salary; **M. E. Cole**, v.p. traffic and sales, \$4,800 salary (down \$4,920) (term expired June 30, 1953); **Myron W. Reynolds**, v. p. operations, \$12,259.76 salary (up \$618.30); **Earl E. Jochim**, comptroller, \$7,200 salary (up \$700); **G. Robert Henry**, exec. v.p., \$10,400 salary (entered office January 11, 1953); **R. H. Herrnstein**, v.p. traffic and sales, \$833 salary (entered office December 1, 1953).

BYERS AIRWAYS, INC.

Robert D. Byers, pres., \$14,000 salary (up \$2,000); **Gladys Byers**, v.p., \$2,200 salary (down \$1,200); **Mildred Bettessworth**, secy. and treas., \$6,825 salary, \$100 bonus and indirect compensation.

CENTRAL AIRLINES, INC.

Keith Kahle, pres. and dir., \$12,000 salary, \$1.00 dir. fee; **F. E. Howe**, v.p., treas. and dir., \$10,000 salary (entered office as v.p. and treas. March 1, 1953 and dir. as of October 6, 1953); **Luther Hudson**, secy., no salary (entered office February 2, 1953); **Alicia H. Pritchett**, asst. secy., \$3,635 salary (entered office February 2, 1953); **Marshall Gibbons**, treas., \$1,911 salary (down \$4,089) (term expired March, 1953); **R. E. Harding, Jr.**, v.p. and dir., \$7,041 salary (down \$3,759) (term expired August, 1953), \$1.00 dir. fee; **Donald B. Ehrhart**, v.p., secy. and dir., \$1,194 salary (down \$7,806) (term expired February, 1953), \$1.00 dir. fee.

CORDOVA AIRLINES, INC.

Merle K. Smith, pres., \$12,000 salary; **Joe H. Kehl**, secy. and treas., \$12,000 salary; **Bertha C. Smith**, dir., \$3,600 salary (up \$3,600).

HELICOPTER AIR SERVICE, INC.

T. H. Reidy, pres., treas. and dir., \$12,000 salary, \$1,500 bonus and indirect compensation; **C. W. Moore**, v.p., \$9,600 salary (up \$300), \$1,500 bonus and indir.; **C. E. Cessna**, secy. and dir., \$3,600 salary (up \$1,800), no bonus and indir.; **R. B. Kiel**, asst. secy. and asst. treas., \$7,200 salary (up \$300), no bonus and indir.

LAKE CENTRAL AIRLINES, INC.

Harry V. Wade, trustee, no salary, \$1,800 bonus and indirect compensation; **R. B. Stewart**, pres. and dir., no salary, \$5,200 bonus and indir.; **William H. Krieg**, secy. and dir., no salary, \$1,000 bonus and indir.; **L. W. Hartman**, v.p. and treas., no salary, \$9,558 bonus and indir.; **R. W. Clifford**, v.p. operations, no salary, \$11,000 bonus and indir.; **D. S. Getchell**, v.p. traffic, no salary (entered office March 1, 1953), \$8,100 bonus and indir.; **J. L. Cory**, asst. treas., no salary, \$6,891 bonus and indir. (entered office September 14, 1953).

MOHAWK AIRLINES, INC.

E. V. Underwood, pres. and dir., no salary; **Robert E. Peach**, exec. v.p., \$15,000 salary (up \$2,250); **John R. Carver**, v.p. and secy., \$11,000 salary (up \$750.14); **Carl A. Benscoter**, v.p. operations, \$13,500 salary (up \$2,250); **W. D. Bosworth**, treas., \$7,000 salary (up \$4,219.51); **W. J. Fields**, asst. treas., no salary; **H. Stuart Goldsmith**, asst. treas., \$5,800 salary (up \$199.84); **Lois P. Hornbrook**, asst. secy., \$3,555 salary (up \$586.90); **L. N. Simmons**, dir. and counsel, \$3,600 salary.

NEW YORK AIRWAYS, INC.

Robert L. Cummings, Jr., pres. and dir., \$18,325 salary (up \$3,125); **William W. Hogan**, treas., \$8,500 salary (up \$6,499.99); **Marshall Skadden**, secy., no salary (entered office April 6, 1953); **Glen B. Eastburn**, asst. to pres. and asst. treas., \$9,000 salary (up \$1,125).



AIRLINE COMMENTARY

• TRAFFIC • SALES • PUBLIC RELATIONS • by Eric Bramley

How much ramp equipment does an airline need to handle a four-engine flight at a terminal? Seely Hall, United Air Lines' assistant v.p.-facilities, has some figures that are eye-openers. Required investment, he says, is over \$50,000. You need 18 units: passenger loading stand, ground power unit, tractor, air conditioning unit (worth \$16,000), fork lift, plus various trucks and carts. This doesn't include \$830 a year to rent an oil truck and \$5,400 for two gas trucks. Depreciation on the airline-owned equipment is \$11,000 yearly, maintenance costs \$3,000 to \$4,000. And whereas three or four men could handle a DC-3, the larger planes require 12 or more, plus 9 to 10 in the baggage room, air freight and transfer areas, and for work at field post office and REA.

High cost of doing business: Northwest Airlines tells us that a Stratocruiser uses 75 gallons of gas on take-off alone, including taxiing and run-up. A DC-6B uses 52.7 gallons (which would take you 780 miles in your car). NWA now spends more for gas in a single month than it did for a year's supply 10 years ago.

Special mention to American Airlines for its new ad comparing cost of New York-Los Angeles trip via air coach, rail coach and car. Including all costs, AA says, air is \$109.90, rail \$112.36 and car \$135.35. Ad layout is very effective; really smacks you in the eye.

Around the industry: Reaction to uniform penalty system on coach flights is mixed. One large airline tells us some carriers are already fudging on time limits; others say it's cutting no-show . . . A major airline is thinking of increasing domestic baggage allowance to 44 lbs. to make it the same as international tourist . . . Industry is considering a joint training film on baggage handling . . . Recent Air Traffic Conference meeting voted down a proposal for an extensive survey of the domestic vacation and pleasure travel markets. Air Transport Association, however, may go ahead with such a project through its research department. . . .

How About Sales Contests?

Don't try to operate a system sales contest and bonus plan until you're sure you're ready for it, warns Frontier Airlines. In an excellent 48-page review of its program for developing passenger revenue, Frontier is refreshingly frank about what schemes work and what don't. Concerning contests, the company says it had such a plan in 1951 and part of 1952 but its "continuance was doomed from the standpoints of integrity and dollar-for-dollar frugality.

"Let's take the integrity. We had no reliable basis in history for the setting of fair quotas. Any weighing method used . . . had two strikes against it because of route changes, frequency changes, lack of history, etc., which were and still are an unavoidable part of our development. Con-

stant tampering with the quotas (complete with guesswork) to correct for these re-sulting inequities, took the 'contest' out of it.

"Now the frugality. With the above being a fact, the 'bonus' would soon lose its tie with incentive and start to become an image for those stations who 'played ball' and a dole for those who didn't. Inevitably we would be paying out reward money to station agents and salesmen for that which they were already being paid to do. We would prefer to give raises, if due, without such subterfuge . . .

"We believe (the contest) was a noble attempt . . . and deserves another trial when Frontier service pattern stability arrives."

Sales and Traffic

First general fare increase by a trunk airline since the spring of 1952 became effective June 1 when Continental Air Lines upped fares 4.5% . . . Delta Air Lines, now operating as Delta-C&S, celebrated its 25th anniversary June 1 . . .

Western Air Lines has started a "red carpet" flight, "The Californian," between Los Angeles and Seattle via San Francisco and Portland. It's WAL's first attempt to identify a premium schedule with a name. Flight features free champagne (first time liquor has been served on Pacific coast flights), steak dinners, orchids for ladies, cigars for men (when deplaning). Pas-

sengers are also allowed to choose seats at check-in counter before boarding . . .

One share of United Air Lines' common stock was given each passenger aboard the first San Francisco-New York DC-7 flights. About 126 people received stock, with a message stating "United is happy to commemorate the start of its . . . DC-7 service by making each of you, its initial customers, a stockholder as well as a first-fighter" . . .

A school to train Japanese travel agents in tariff interpretation and airline ticketing procedures has been opened by UAL in Tokyo. Instructor is James Ando, Tokyo agency sales manager . . . UAL has opened a ticket office in the Chicago financial district, 1 N. LaSalle St. . . .

Congratulations to Capital Airlines on its new movie, "This is Capital." The 30-minute color film was the work of John Prihode, Capital's photographer, and L. L. "Bob" Doty, assistant public relations director. It was produced at a fraction of the price charged by a professional outfit and it's an A-1 job . . .

Allegheny Airlines sold 96 members of the Lion's Club of Altoona, Pa. (stronghold of the Pennsylvania Railroad) on a one-day trip to Washington. There were 54 first-riders. Among the passengers were at least three railroad employees: an engineer, traffic man, and policeman . . . Airlines' air mail committee is distributing some eye-catching direct mail pieces emphasizing value of air parcel post . . . A new 20-page booklet, "A Visit to Delta-C&S Headquarters," is being distributed by the airline to school teachers, principals, and librarians.



DIAGRAM AT COUNTER gives passengers on Western Air Lines' "Californian" a chance to choose seats before boarding.



LOCKHEED SUPER CONSTELLATION

Rohr builds more power packages for airplanes than any other company in the world — and this picture shows the Rohr-built power packages on the wing of the big, beautiful Lockheed Super Constellation. In addition to producing power packages for the world's leading commercial and military planes, Rohr Aircraftsmen are currently making more than 25,000 different parts for all types of aircraft.

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CAB Staff Urges Charter Limitations

CAB's Bureau of Air Operations, stating its position in the Large Irregular Investigation for the first time, recommended temporary certification of selected non-scheduled lines for "bona fide charter" operations. But the Board's staff opposed granting authority, by certificate or exemption, for transportation of individually-ticketed passengers or individual shipments of cargo.

Bureau Counsel Mervin F. Bagan filed the statement subsequent to hearings but prior to briefs (due August 23) as prearranged among the parties.

Bagan suggested charter certificates for five-year periods, limiting passenger authorizations to domestic and overseas transportation and permitting cargo charters in domestic, overseas, and foreign transportation. Following criteria would apply in the selection of each carrier:

1. The extent of the carrier's experience in successfully providing services similar to those recommended herein;

2. The extent to which the previous operating history of the carrier has

demonstrated recognition of its common carrier obligations to the public; and

3. The carrier's previous record of compliance with the Board's regulations and those of other Government agencies.

Bagan said the term "bona fide charter" contemplates the "contracting of the entire capacity of an aircraft . . . on a time, mileage, or trip basis. Such a charter does not contemplate solicitation by the carrier, his agent, or a group-forming or consolidating intermediary of individual persons to make up a charter group, or of individual shipments of cargo to make up a plane-load charter of property. Thus, ticket agents, passenger forwarders, air freight forwarders, and other group-forming or consolidating agencies would be prohibited from chartering aircraft."

Board's staff held that the public convenience and necessity do not require, and "it would be adverse to the public interest to grant," certificates or exemptions to any of the non-scheduled applicants for route-type operations.

Braniff "Return-to-Subsidy" Proposed

CAB has proposed annual subsidy of \$1,366,000 for the "Mid-Continent" portion of Braniff Airways' domestic system, but proposes to keep Braniff's original Route 9 subsidy-free as it has been since October, 1951.

The CAB offer was made on Braniff's request for total annual mail pay of \$4,425,541. But it was whittled down through informal rate conference procedure to total annual pay of \$2,325,000 of which \$959,000 is service pay and the remainder subsidy.

The "Mid-Continent" routes absorbed by Braniff in an August, 1952, merger were on a subsidy basis prior to the merger. Following Board approval of the deal, however, the entire merged system, over Braniff's objections, was placed on a non-subsidy basis.

CAB estimated its proposed "return-to-subsidy" for Braniff actually involves \$203,000 less annual subsidy than for the last year of Mid-Continent's operations prior to the merger.

In addition, in a Pioneer-type ruling, CAB refused to underwrite with mail pay seven of Braniff's 23 Convair 340 aircraft, stating: "It is settled Board policy . . . that equipment substitutions of this character which result in an unwarranted increase in subsidy requirements, will not be underwritten with increased mail."

Board indicated also that Braniff's subsidy needs should be reduced in the future as the full benefits of the merger and the re-equipment program are realized.

CAB MISCELLANY

Trans World Airlines applied for Louisville-New York non-stop rights and removal of restrictions requiring stops at Cincinnati, Dayton and Columbus, or Pittsburgh.

Colonial Airlines applied for increased domestic mail pay to produce

annual total, beginning June 1, 1954, of \$989,208.

Eastern Air Lines applied for removal of restrictions on flights between Miami and St. Petersburg, and those affecting service to Raleigh-Durham.

CAB NEWS

AS OF NOW . . .

CAB's "big three" route cases stand this way: (1) New York-Chicago Case is ready for an examiner's report; (2) Denver Service Case—hearings now under way in Washington; and (3) Additional Southwest-Northeast Service Case slated for hearings in July. Only the New York-Chicago Case stands much chance of concluding this year.

A fourth major route proceeding could be in the making although it originally was intended only to improve service between Norfolk and Atlanta. Applications filed recently indicate the case could spread to an east coast proceeding involving such things as New York-Washington and New York-Miami service. CAB will decide shortly on the scope.

The Southwest Airways Renewal Case bears watching as the precedent case for weighing the advantages and disadvantages of a local line giving way to a trunk carrier. Key at this point is a contemplated CAB order which will consolidate in the renewal case United Air Lines' application for SWA's routes. Some CAB members look on this as the most important case for local service carriers in years.

RECENT CAB DECISIONS

• Colonial Airlines mail rate for Bermuda operations reopened to determine whether and to what extent it is excessive.

• United Air Lines turned down on exemption bid for non-stop rights between Portland and Chicago.

• Braniff Airways authorized to suspend service at Ponca City, Topeka, and Galveston; action on other requested suspensions at marginal points deferred.

• British Overseas Airways Corporation trans-Atlantic permit amended to add Manchester, as a co-terminal with London and Prestwick, and add Chicago as a co-terminal with New York.

• Linee Aeree Italiane trans-Atlantic permit amended to include Milan and Naples, Italy.

CAB CALENDAR

June 22—Oral argument before the Board in Service to Fayetteville, Ark. Case. Washington, D. C. Docket 5592 et al.

June 24—Oral argument before the Board in Trans-Texas Airways Control Case. Washington, D. C. Docket 5993.

June 30—Hearing in Trans-Pacific Airlines Certificate Renewal Case, Honolulu, T. H. Docket 6434 et al.

July 20—Hearing in Trans-Texas Airways Renewal Case. Tentative. Docket 6485.

July 21—Hearing in Additional Southwest-Northeast Service Case (civic intervenors). Tentative. Docket 2355 et al.

July 26—Hearing in Southwest Airways Renewal Proceeding. Tentative. Docket 6503.

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INTERNATIONAL AVIATION

MILITARY

SWEDEN: The Swedish Air Force has ordered a "substantial number" of Pembroke military communication aircraft from Hunting Percival Aircraft Ltd. (formerly Percival Aircraft Ltd.). Ten passengers will be carried in rear-facing seats; powerplants will be two 550 hp Alvis Leonides radials.

EL SALVADOR: An undisclosed number of Beech T-34's have been ordered for delivery in August.

BELGIUM: Three Bristol Sycamore helicopters have been purchased by the Belgium Air Force.

JAPAN: Competition for overhaul of jet engines for the U. S. Far East Air Force has been won by the Kawasaki Aircraft Co. Ltd. Lockheed recently agreed to furnish the firm technical assistance on jet airframe overhaul and on license production of the Lockheed T-33 and F-94.

FRANCE: A group of 15 officer graduates of the French Air War College are touring USAF installations in the U. S. this month, headed by Col. Jacques M. J. Vallois.

MANUFACTURING

FRANCE: A cooperative test center organization has been set up by 50 small French aircraft manufacturers. The group will be known as the Societe pour le Perfectionnement des Matériels d'Equipements Aeronautiques. Employees of the firms total 15,000.

A light helicopter has been built by SNCA du Nord at its Mureaux plant for the Spanish firm Aerotechnica. A Turbomeca Artouste engine powers the aircraft.

One thousand Nenes have been delivered by Hispano-Suiza, which will soon go to Verdon production.

Societe Carburateur Zenith is to build flight refueling equipment under license from Britain's Flight Refuelling, Ltd. FR equipment is installed (or scheduled for installation) on the SNCASO Vautour, SNCASE Baroudeur and Caravelle, and Hurel Dubois HD 45.

BRITAIN: A new low-speed wind tunnel has been put into operation by de Havilland at Hatfield, England. The new unit provides speeds up to 170 mph. A 500 hp motor drives a fan 12 feet in diameter.

The Rolls-Royce axial twin-spool 3000/4000 hp turboprop which is now under development is designated the RB109.

New jet trainer now under construction by F. G. Miles, Ltd., has been designated M.100 Student. It is powered by one Mabore or two Palas engines.

CANADA: New president of Aircraft Industries of Canada, Ltd., is Joseph H. Lucas, formerly vice president and general manager.

Manufacturing and sales rights for the four-place Helio Courier monoplane have been obtained by Fleet Manufacturing, Ltd., of Ontario, Canada, from Helio Aircraft Corp. of Boston.

SPAIN: A firm has been formed to overhaul aircraft and engines in Madrid. Named Talleres Aeronauticos de Barajas, the organization was formed under the sponsorship of The Bristol Aeroplane Co.

AIRLINES

IATA: Technical work of the International Air Transport Association will hereafter be carried on by "task forces" which will replace the present system of specialized sub-committees, it was decided at the recent IATA technical committee meeting in Barcelona.

SPAIN: The Spanish carrier Iberia has completed the flight training program at Burbank, Calif., on its first Lockheed Super Constellation. Plane is due for flight to Spain soon.

Changes in the U. S.-Spanish bilateral agreement which would allow Iberia to operate to New York are still hanging fire. Meetings were held in mid-May, after which the Spanish representatives asked for time to consult with Madrid.

ICAO: New president of the Eighth Session of the Assembly of the International Civil Aviation Organization is Walter J. Binaghi, of Argentina. He is alternate representative of Argentina to ICAO and has been chairman of the Air Navigation Commission since 1949.

AUSTRALIA: June 27 will see the end of Solent flying boat operations on Tasman Empire Airways. At that time DC-6's are scheduled to take over the services formerly flown by the Solents.

INDIA: Air-India International plans soon to start services to Colombo and Singapore, and to Bangkok, Hong Kong, and Tokyo with Constellation equipment released from the India-Europe route by the delivery of Super Connies.

INDONESIA: Garuda Indonesian Airways has become 100% Indonesian owned following the sale by KLM Royal Dutch Airlines of its 49% shareholding for about \$3,800,000.

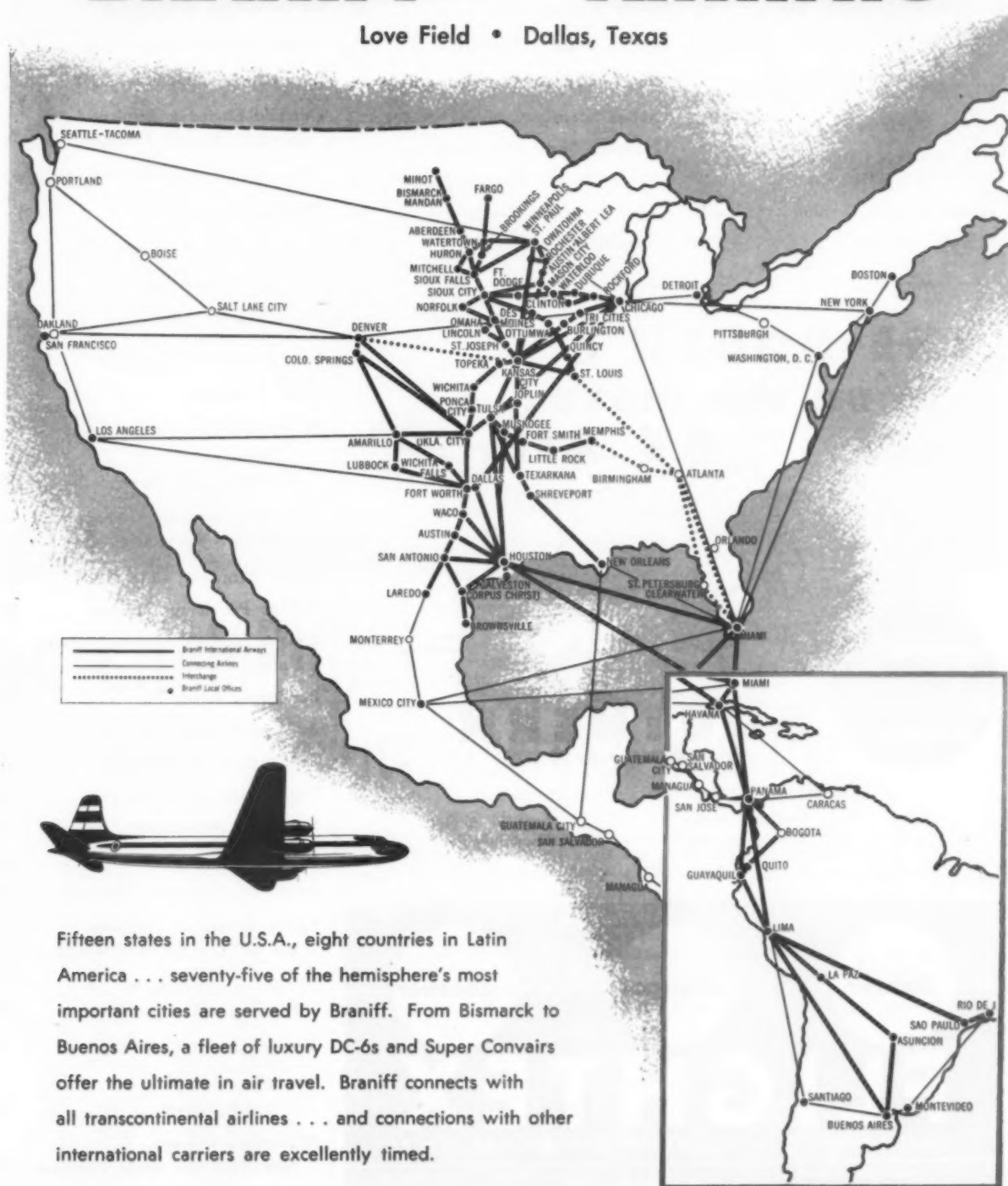


Capital signs for Viscounts. The signatures go onto the dotted lines in London as Capital Airlines buys three Vickers Viscounts, with option on 37 more (see story, page 17). From left to right, C. H. Murchison, chairman of Capital's executive committee; J. H. Carmichael, president of Capital; R. G. Lochiel, vice president and treasurer of Capital; Sir James R. Young, chairman of Vickers-Armstrongs Ltd.; G. R. Edwards, managing director of Vickers' Aircraft Division; Major-General C. A. L. Dunphie, deputy chairman and managing director of Vickers; and R. P. H. Yapp, director of Vickers.

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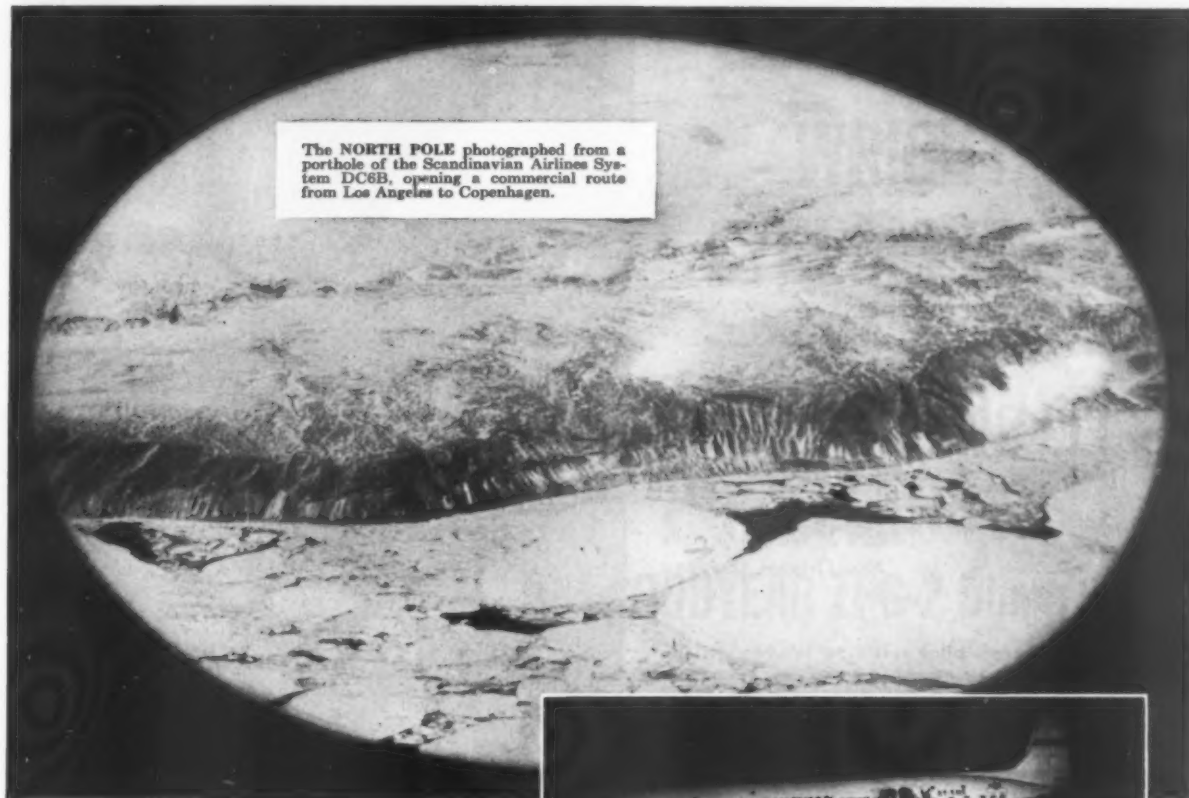
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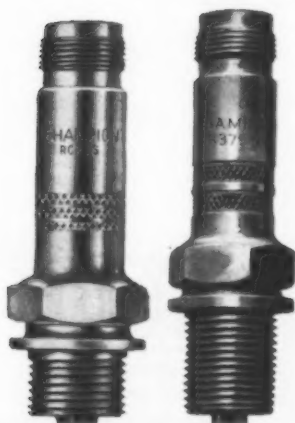


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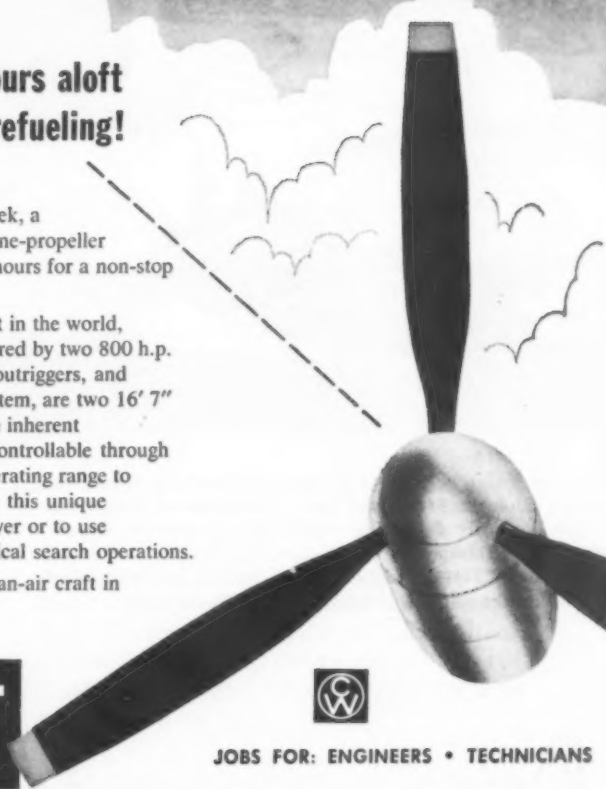
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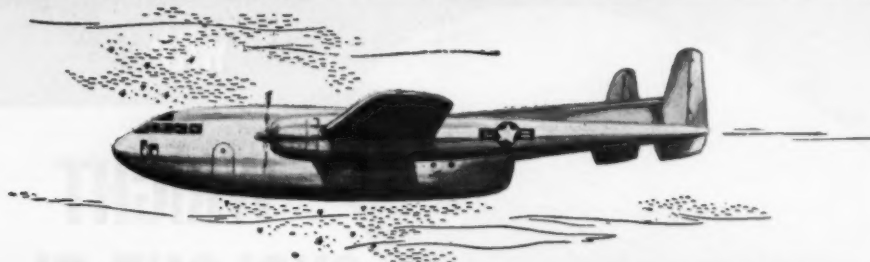
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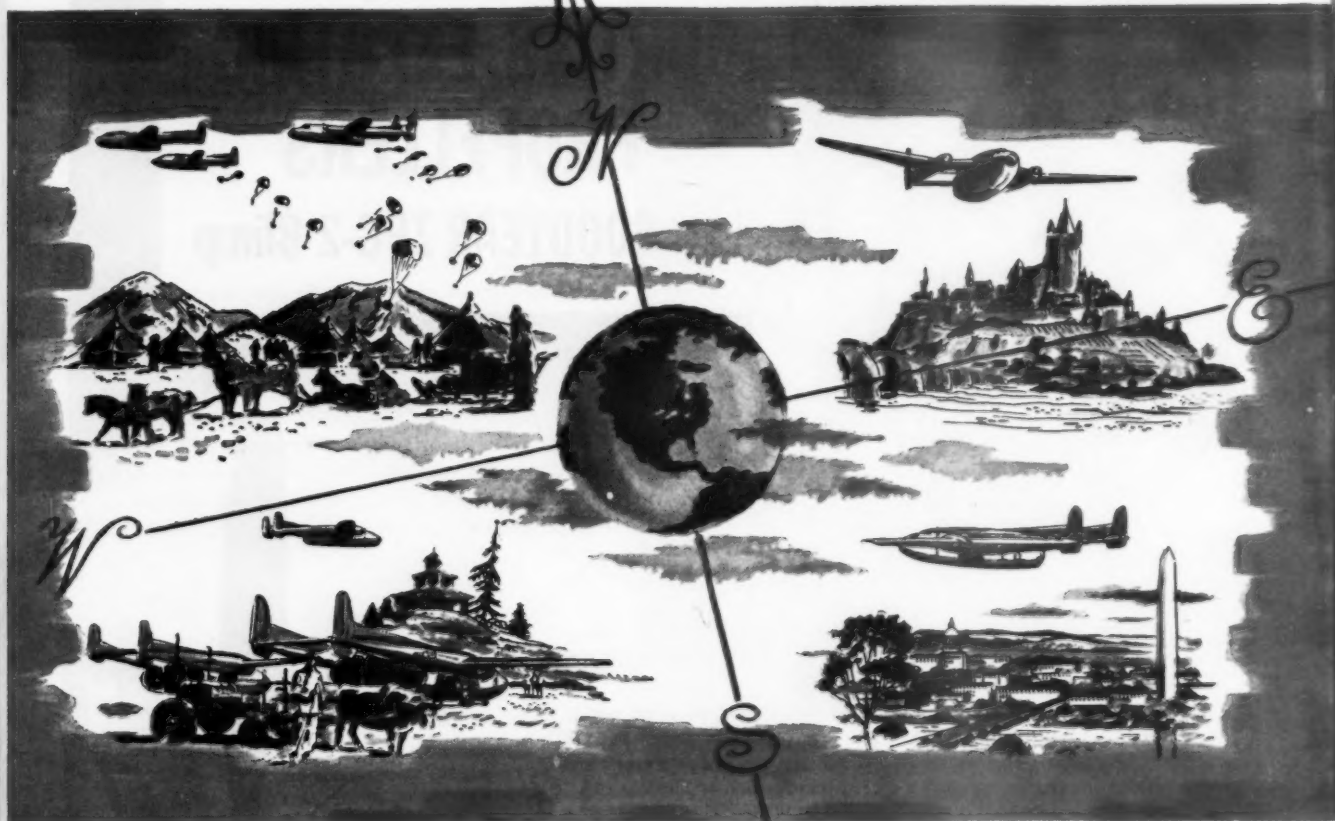


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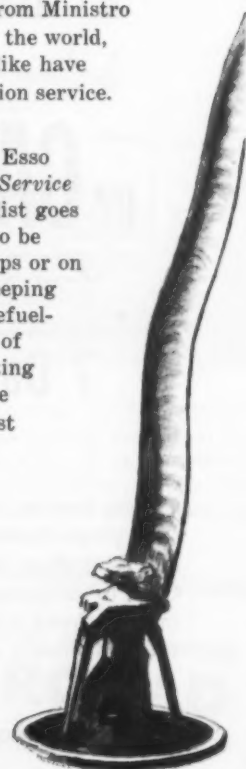
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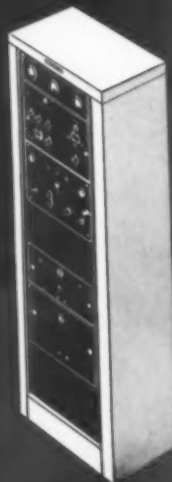
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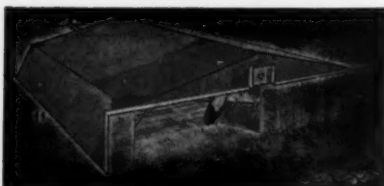
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WAYNE W. PARRISH

En Route



My Big Ideas. I saw a familiar Texaco sign in this French Basque town of Bayonne just north of the Spanish border in the foothills of the Pyrenees so I drew up at the pump for a load of gas which the French call *essence* for some quaint reason. It was a garage, more than a filling station as we know them, but you soon learn to stop looking for plush stations and take on gas when you find it.

It was mid-morning, and rather cool in this first week of April. My wife and I had been to Bayonne before; it's an interesting old town with an excellent and extensive Basque museum. Basques, as you may or may not know, are pretty independent people who speak a very difficult dialect and they are both in France and Spain. Bayonne is the French center and Pamplona is the Spanish.

Well I had a great idea, and boy how I get great ideas sometimes, that I would avoid the main road into Spain to San Sebastian. Yes sir, I would do some adventuring in the back country. I wanted to drive through the lower west end of the Pyrenees to Pamplona. So my wife asked the garage man if the road was okay. He said he didn't know but a bus driver was right handy and he certainly would know.

How Wars Start. Let me give you a little tip right now. You can get more fast free travel advice in Europe, especially in France and Spain, and have more of it wrong, than anywhere in the world. They dish it out with big smiles and waving of hands like an airline lawyer pleading a route case and you think boy oh boy aren't these people friendly and helpful and how long has this been going on and after all, you know, this world is just one happy family and who starts all these wars anyhow.

The bus driver, a big jovial, burly guy, gave us positive assurance that the road was just fine over to Pamplona. Perish the thought. Not worth inquiring about. And we were going on to Burgos? Wonderful place. He was driving a bus-load over there next Sunday. Sure, no trouble at all. Have a good trip. Bonjour monsieur, bonjour madame. And so on.

The Map Says So. So, what could I lose. With expert advice from a bus driver who knows the country, and a full load of gas, we'd just hop on across the border into Spain and have lunch in Pamplona.

Like hell I would. I know now how wars start. Except that I didn't trouble to drive back to Bayonne and start this one. Sure, I drove on out National Route 132 bound for Cambo, a little summer

resort town, at which point I would take D-20 to the border and pick up Spanish National Route 121. Devilishly simple. It was all on the map. So what this was my first motor trip to Spain. Others have done it, so can I.

Well I came to Cambo but I could find no sign whatever indicating any route to the Spanish border. But there were blank places where signs once were. Finally in Cambo I got my wife to go ask a French cop about the road to Spain. He looked up quizzically from his newspaper and asked if we were heading for the interior of Spain. She said yes. He pointed to a road leading south. Okay, signs or not, off we went.

Blood Pressure Up. In due course after winding around the foothills on narrow roads and being held up by flocks of sheep hogging the road and finding no semblance of a sign leading to any Spanish border or town, I gave up and drove west by narrow roads to St. Jean-de-Luz on the coast and decided to forget about trying to find a picturesque scenic and un-touristed route to Pamplona. In fact by this time it was evident that I couldn't go to Pamplona and still make Burgos by nightfall.



Sure, I blew a fuse. Every time I thought of that voluble bus driver who assured me the road was fine, I blew another one. But in St. Jean-de-Luz, a delightful seacoast resort below Biarritz, we had some super-delicious pastry with coffee and I calmed down. I finally figured through my thick skull that the border had been closed for the winter and the signs taken down and maybe in a month or two that road would be open for business, summer only. There was probably snow in the pass.

Over the Border. So we took the traditional all-year route which crosses the border at Hendaye-Irun along the sea and I had my first experience getting my own car through customs and immigration for both countries. The French formality was quick and no baggage inspection. I drove across the international bridge and wondered what the Spanish would do.

Nothing much, it turned out. No baggage inspection. A government tour-

ist official pasted a red-and-yellow sticker on the windshield stating to all the world that I was a tourist visiting Spain. (And what a godsend that sticker proved to be; every cop in Spain respected it.) The main thing was to get the proper paper torn out of my *carnet de passage*, which is an international thing which clears your car from one country to another. Lots of stuff to fill out, which nobody can read, but it works. To this day I don't know what some of the stuff meant but I filled it out anyway. It cost a few pesetas in tax and of course I had to give the bridge flunkie a tip but we were through the border within 20 minutes and on our way.

Just Be Dumb. I learned another lesson besides asking people advice about directions. Just be a dumb tourist who doesn't know the language. It sure works. Of course I wasn't fooling because I know only a few words of Spanish, but don't take chances. Just pour out English and you'll be waved through.

The dozen miles or so between the border and San Sebastian are bad. Construction work, chuck holes, and a lot of traffic. I wanted to avoid San Sebastian in the first place because I have thought it to be greatly over-rated as an attractive city. I can't see it. Looks run-down. And it was here that my blood pressure moved up again.

The Spanish national highways are very well marked. They really are. Especially out on the plains a hundred miles from nowhere and without any possibility of turning off and getting lost. But the marking system stops at the limits of cities. That's when the cities take over, except they rarely do. Take San Sebastian. What markers there are can be very confusing and you finally end up stopping abruptly in front of a cop and glaring at him with your teeth held tightly together and sputtering out in what must be goshawful Spanish the name of the town you're trying to get to. The cop, noticing the tourist sticker on the windshield, goes into great details in Spanish, trying to be both courteous and helpful. Of course you don't understand one damn word he says, but you watch his arm and just head on in that general direction hoping for the best and yelling out *muchos gracias* as you take off.

Calm Down, Bud. The Spanish see little reason to put up any direction signs in towns. After all, the roads have been there since the Romans first laid them out. They haven't changed. Everybody through the centuries has known where they are. So why does anybody need signs? Only stupid tourists and where do they think they're going in such a hurry anyway. So calm down, bud, take it easy or you'll burst a blood vessel. You'll just have to pull up at the next rail crossing and wait anyway, there's a train due today.

Okay, so we were about three hours behind schedule. We'd skip lunch and head on toward Burgos, the goal of two decades. I had been there early in 1931 and I wanted to see if that wonderful cathedral still held for me the overwhelming charm it had on the first visit. It was just 150 miles from the border and the prospect was exciting.



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News at Deadline

Senate Group Votes \$163 Million AF Boost

The Senate Appropriations Committee has approved a fiscal 1955 Air Force budget totalling \$10,982,860,000, an increase of \$163,550,000 over the total voted by the House on April 30.

This, combined with an increase of \$13,284,000 to the Navy (making a Navy total of \$9,719,122,500), restores about half of the \$371,000,000 requested by the Pentagon. Both the Air Force and Navy increases are largely aimed at financing flight activity to train crews for the air power build-up.

The Air Force received increases in two items—maintenance and operations, boosted by \$142,000,000 to \$3,544,792,000; and research and development, increased \$21,550,000 to \$431,000,000. The Navy increase included a \$10 million hike for aircraft and facilities.

The Senate Committee also provided for a continuation of a \$250,000,000 authorization for stockpiling reserve tools and facilities which the House proposed to let expire June 30, 1954. Also, there was a reinstatement of \$25,000,000 for the Air Force stock fund that was rescinded by the House.

421-MPH Sled Ride Tests Pilot Endurance

Ground speeds up to 800 mph by a rocket-propelled railway sled are expected to be attained during studies of jet pilot survival methods being conducted by Air Research and Development Command at Holloman Air Development Center, Alamogordo, N. Mex. This was predicted after Lt. Col. John P. Stapp, U. S. Air Force aeromedical research scientist, rode the Northrop-built sled to a new world speed record for land travel early this month.

The record, 421 mph, was set on the 3,500-foot track in the first manned run of the sled in which Col. Stapp tested a special safety harness. Exposed to the air blast as the sled rushes down the track, the colonel expects to explore all phases of human tolerances to high-speed bailouts. Tests at the expected speed of 800 mph would stimulate a bailout at approximately 1800 mph at 40,000 feet, it was said.

Another major factor, that of abrupt deceleration, is also under study. During his first record-making run,

Col. Stapp withstood gravity forces of 22 g's in the rapid stop. Having already been exposed to decelerations up to 45 g's in earlier tests, Col. Stapp has expressed the opinion that humans can survive forces up to 100 g's for extremely short intervals, although non-fatal injuries are likely.

Boeing Reveals New Gas Turbine Engine

The Boeing Airplane Company has announced a new gas turbine engine more powerful and economical than the earlier Boeing Model 502-2, which has powered a variety of vehicles ranging from a highway truck to an experimental Kaman helicopter.

The new engine, designated the 502-10, produces 270 horsepower at 3,000 rpm for take off and has a normal rated power of 240 hp at 2,900 rpm. The earlier model had a normal rated horsepower of 175 hp and take-off power of 210 hp. Fuel consumption is 25% less for the 502-10 than for the earlier model.

According to Boeing engineers, the increased power and economy were achieved through refinement of compressor and turbine designs and by raising the pressure ratio of the compressor.

NACA Pilot Wins 1954 Chanute Award

George E. Cooper, assistant chief of the flight operations group at NACA's Ames Aeronautical Laboratory, has won the 1954 Octave Chanute award, presented annually by The Institute of the Aeronautical Sciences to a pilot for a notable contribution to the aeronautical sciences. Cooper's citation reads: "For outstanding piloting and research at transonic and supersonic speeds resulting in increased understanding of transonic airflows and the problems of stability, control and buffeting."

The Thurman H. Bane award to a U. S. Air Force officer or civilian for achievement in aeronautical development, will go to Dr. Helmut G. Heinrich, aeronautical research engineer at Wright Air Development Center for "outstanding accomplishments in the field of personnel parachute development."

CAB Wonders if Panagra Offer Meets Terms

Braniff Airways and CAB are studying last week's offer of Pan American-Grace Airways to purchase the "physical assets" used in Braniff's international service. The offer, whether or not accepted by Braniff's board of directors, raises the question of whether the contemplated change meets the terms of CAB's March 26 order in the New York-Balboa case.

The 60-day period set by CAB at that time for the airlines to come up with a plan for integrating international routes of Braniff and Panagra expired May 26.

Panagra President Andrew B. Shea described the "physical assets" as "four DC-6 aircraft (together with related engines, spare parts and inventories) and Braniff ground facilities in the Caribbean and South American areas." Braniff's routes are not included in the definition. In exchange, Panagra offered \$5 million in stock of Pan American World Airways and W. R. Grace & Co. No Panagra stock was offered.

Braniff turned down a previous offer which was, according to Braniff, "that if Braniff were disposed to withdraw entirely from its South American operations, Pan Am and Panagra would be willing to pay a fair and reasonable price for Braniff's equipment and facilities in South America." A Braniff counter-offer, under which "Braniff would transfer its international routes, franchises, and properties to Panagra, receiving in payment therefor capital stock of Panagra," was rejected by Grace, Pan Am, and Panagra.

Lee Predicts Early Viscount Certification

Capital Airlines could hope for speedy certification of the Vickers Viscount turboprop transport following the return last week from England of a four-man Viscount study team. According to CAA Administrator Fred Lee, a four- to six-week study of data brought back by the team will be necessary, but no special problems are anticipated.

Lee said the CAA is particularly interested in the turboprop powerplant and controls, indicating that the plane's speed and altitude were in the range of aircraft now in general use.

Frost Named to New Post by Eastern

M. M. "Jack" Frost, Eastern Air Lines vice-president-traffic and sales since 1950, has been named executive assistant to E. V. Rickenbacker, board chairman. Frost will be succeeded by William L. Morrisette, Jr., Miami traffic and sales manager. Maurice Westphal, Chicago traffic and sales manager, will take over the Miami post, with Marvin Byrd, Louisville TSM, going to Chicago.

Scheduled All-Cargo Lines Show Net Loss

The percentage of scheduled miles completed by U. S. scheduled all-cargo airlines during the first quarter of 1954 has sagged to a new low of 65.81%, according to reports filed with the CAB. This was despite the fact that Aerovias Sud Americana and Riddle completed 100% of miles scheduled.

Even though the average load factor was improved by 4% over 1953 and schedules were cut back, the carriers March 31 report showed a net operating loss of \$768,716.

AF Awards \$14 Million In New Contracts

Air Force contracts totalling more than \$14 million have been awarded to nine firms, according to the Commerce Department's synopsis of contract awards. Biggest award went to Sikorsky Aircraft Division, United Aircraft Corp, Bridgeport, Conn., for helicopter spare parts and special tools. It totalled \$5,453,060. Other awards:

Harvey Machine Co., Inc. Torrance, Calif.—\$4,500,000 for facilities for production of forgings and extrusions; Continental Aviation & Engineering Corp., Detroit, Mich.—\$1,004,917 for turbojet engines; Engineering and Research Corp., Riverdale, Md.—\$865,742 for flight simulators; Western Electric Co., New York—\$554,400 for product improvement. Also:

Raytheon Manufacturing Co., Newton, Mass.—\$838,017 for electron tubes; Sorensen & Company, Inc., Stamford, Conn.—\$335,398 for voltage regulators; Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.—\$284,932 for engine power control test stands; and Link Aviation, Inc., Binghamton, N. Y.—\$621,000 for spare parts.

B-61's Being Shipped Sectionally; J33's Used

The Martin B-61 Matador pilotless bomber, given its first public firing before Aviation Writers Association members at Cape Canaveral, Fla., a week ago, is being built and delivered in sections to be assembled in the field just prior to launching, it was revealed by the Air Force Missile Test Center.

The nose, wing, centersection, aft tail, fin, bullet fairing stabilizer, and instrumentation are packed as seven separate units that can be stored for long periods. After assembly it will take about 90 minutes to get a B-61 into the air in a tactical situation, it was said.

Learned for the first time is the fact that the Matador is powered by an Allison J33 turbojet which drives it at speeds comparable to latest jet fighters over ranges of 500-600 miles. Indications are that use of an atomic warhead is feasible.

The first of two pilotless bomber squadrons has completed its training at the Missile Test Center and is now in Germany.

Gurney Suggests Safety Group For Industry

CAB Chairman Chan Gurney has suggested establishment by the aviation industry of an "aviation safety counselors group" whose only function would be "accident avoidance." The group, Gurney said, could be made up of a small number of experienced pilots, aircraft engineers, maintenance experts, and operations people "all with a keen imagination and a fine nose for accident potentialities."

PAA Pacific Division To Convert 17 Boeings

Pacific-Alaska division of Pan American World Airways will convert the remainder of its entire fleet of 17 Boeing Stratocruisers to combination aircraft to handle both standard fare and tourist passengers at the same time. Five Boeings were converted originally for the combination experiment started April 1. The sixth airplane will enter the hangar at San Francisco pleted about March 1, 1955.

Work scheduled calls for an airplane to be completed every 20 days. This means the 17th plane will be completed about March 1, 1955.

As they are completed the planes will be assigned to the San Francisco-Tokyo route.

Floor Fight Marks Passage of CAB'S Budget

Senate passage of a CAB budget totaling \$43,777,000 for the fiscal year 1955 came last week. The amount allowed by the Senate—for airline subsidy payments, \$40,000,000, and CAB's operation, \$3,777,000—were exactly the amounts voted in the House.

Before the final Senate vote, however, there was a brief floor fight against the CAB's portion of the total Commerce bill by Sen. John Kennedy (D.-Mass.). The senator's proposal was to cut the committee-recommended sum of \$40,000,000 for airline subsidy to \$30,000,000 and further provide them not over \$15,000,000 was to go to the national air carriers.

During the hour-long debate on his amendment, Kennedy asked that "chances don't look very good, but I'll try anyway." Sen. Styles Bridges (R.-N.H.), who was handling the bill on the floor, said "I know Sen. Kennedy is trying to do a job but I don't think he has all the facts."

Bridges - Symington Report Called "Unfair"

The Office of the Italian Air Attache in Washington has branded as "unfair" the bi-partisan NATO aircraft procurement report made by Senators Bridges and Symington. The senators had criticized Italy's contract to produce 50 North American Aviation-License F86K Sabres as "uneconomical," and expressed alarm at the high percentage of communists at the Fiat Co.


Said Col. Franko Fiorio: "as everybody knows, the first part of the learning curve in any manufacturing process is always uneconomical when compared with the production part of the same curve."

"Such a higher cost '\$22.5 million plus \$32 million to MAA for the part and prototypes' doesn't pay for only 50 F86K's. It also involves a priceless standardization in tools, material, and equipment, the training of skilled labor, and therefore a potential source of future self-support for European nations flying American airplanes."

With regard to communists, Fiorio said: "The fact that GCIL 'labor union' is red-controlled doesn't mean that all the workers in GCIL are communists, in the same way that the U. S. Senate is Republican-controlled doesn't mean that all the senators are Republican."

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DESIGN FEATURES ARE SPECIAL: The RR-11050 is vertically mounted and totally submerged in the bottom of the fuel tank, with only electric leads and plumbing connections exposed. The shaft seal, located under the motor, is drained to assure dry, vapor-free motor operation. In addition, the motor-pump shaft, carrying both the main centrifugal type impeller and the vapor separating impeller, runs on two ball bearings, this design permitting safe dry-running, if pump is inadvertently allowed to run on a dry tank. An exclusive feature is the provision for removal of the inlet screen with the sump cover for cleaning, obviating the necessity for removing the entire pump.

QUALITY IS PRIME: Benefitting from a half century of specialization in pump design and manufacture, Lear-Romec engineering, production, inspection procedures, and test facilities assure deliveries of B-18B pumps of highest quality, precision, and dependability. For complete engineering and test reports, address inquiries to: LEAR, INC., LEAR-ROMEC DIVISION, Elyria, Ohio.



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